I 29.2:In 2/10/draft
US 12 Scenic Road Feasibili...
Clemson University
3 1604 019 581 109

2 scenic road feasibility study

PUBLIC DOCUMENTS
DEPOSITORY ITEM
OCT 2 4 1990
CLEMSON
LIBRARY

INDIANA DUNES

NATIONAL LAKESHORE / INDIANA

Digitized by the Internet Archive
in 2012 with funding from
LYRASIS Members and Sloan Foundation

http://archive.org/details/usscenicroadfeas00nati

US 12
scenic road feasibility study

draft
september 1990

INDIANA DUNES NATIONAL LAKESHORE • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

SUMMARY

The purpose of this study is to determine the feasibility of establishing a parkway or scenic roadway managed by the National Park Service using the existing US 12 highway corridor and portions of other existing roads in the national lakeshore area.

The existing US 12 corridor does not qualify as a national parkway for two reasons - the corridor does not have sufficient merit and character to make it a national attraction, and there are many uncontrolled highway access points. Portions of the corridor clearly have high quality scenic views as well as historical significance. The corridor is more a connecting route between recreational, historic, and natural areas than it is a destination by itself.

However, according to criteria that have been adopted by many states, including Indiana, the US 12 corridor does qualify as a scenic road. These criteria include:

- outstanding scenic vistas and recreation facilities
- diversity of recreational experiences and activities
- changes in terrain and landscape
- connects scenic, historic, natural, and recreational areas

SCENIC ROAD ALTERNATIVES

This *US 12 Scenic Road Feasibility Study* describes one no-action and three action scenic road segment and alignment alternatives as well as four management options for establishing the Dunes Highway scenic road. Design modifications for the scenic road are also addressed in the study.

The three action alternatives would prohibit trucks from using the scenic road, and interpretive pulloffs and information kiosks would also be developed in each of the alternatives.

The National Park Service would work with federal, state, and local authorities to improve intersections so that truck, recreational, and local traffic can move through and around the scenic corridor safely and efficiently. The maximum speed permitted on the scenic road would be 35-45 mph (less near recreational areas and major intersections or for safety reasons). A bike lane or bike path would be established along or near the Dunes Highway (see draft *Little Calumet River Corridor Plan* (NPS 1990b) for a discussion of bike lanes and paths).

Depending on which segment alternative and which management option are selected, boundary adjustments could be made for rights-of-way and scenic corridors. These adjustments, which would include the scenic road within the national lakeshore boundary under the three action alternatives, would be necessary for law enforcement and maintenance of the US 12 corridor after its designation as the Dunes Highway scenic road.

Segment Alternatives

Alternative 1 includes the east end of US 12 with Beverly Drive. Alternative 2 encompasses the entire length of US 12, including the Burns Harbor industrial segment where the northern two lanes would function as an industrial service or frontage road and the southern two lanes would be part of the designated scenic route. Alternative 3 is similar to alternative 2 except that the Burns Harbor industrial segment is excluded and scenic loop routes would be designated in the town of Beverly Shores. In each of the alternatives, US 20 would be redesignated US 12/20 for portions that parallel scenic road segments of US 12.

Management Options

Designation of any of the alternatives as a scenic road would still leave one important consideration - that of managing the scenic highway. Several approaches to management of the highway were considered.

Under management option 1, the National Park Service would acquire ownership of the right-of-way and assume management responsibility for the Dunes Highway. The Park Service would work with adjacent communities to develop voluntary design standards that could be adopted by the communities along the Dunes Highway. Existing zoning ordinances that regulate the type and density of land use would remain in effect.

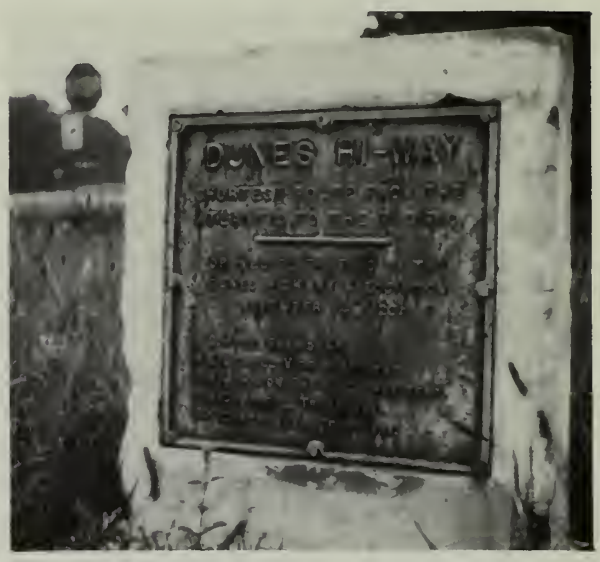
Under management option 2, the Park Service would acquire all lands within the potential scenic corridor in addition to the US 12 right-of-way. This approach would allow the Park Service to manage all lands that can currently be seen from US 12 or that have the potential to be seen in the future.

Management option 3 is a combination of management options 1 and 2, with NPS management of the scenic highway right--of-way and portions of the scenic corridor. The Park Service would acquire through scenic easements or other means only those parcels that are critical to maintaining the integrity of scenic views from the scenic highway.

Management option 4 provides for interagency and intergovernmental management of the scenic road. Intergovernmental management of a scenic road would distribute management and development responsibilities equally among the participating federal, state, county, and local agencies.

NEXT STEPS

This draft document will be revised based on public input and the final document will be transmitted to Congress. Any further Park Service involvement will require congressional authorization.



CONTENTS

INTRODUCTION 1
- BACKGROUND 1
- PURPOSE OF THIS FEASIBILITY STUDY 1
  - Does the Existing US 12 Corridor Qualify as a National Parkway? 1
  - Would Existing US 12 Qualify as a Scenic Road? 1
  - Would State Designation of a US 12 Scenic Corridor Meet NPS Objectives? 6
- PROCEDURE 6
- STUDY OBJECTIVES 6
- STUDY AREA 7

REGIONAL CONTEXT AND EXISTING US 12 CORRIDOR 8
- REGIONAL CONTEXT AND SIGNIFICANCE 8
  - The National Lakeshore 8
  - The US 12 Corridor 9
- EXISTING RECREATION FACILITIES WITHIN THE STUDY AREA 10
- WHAT VISITORS SEE WHILE TRAVELING ON US 12 15
- TOURISM 16
  - Regional 16
  - National Lakeshore Visitation 17
- EXISTING TRAFFIC CONDITIONS 17

SCENIC ROAD ALTERNATIVES 21
- ALTERNATIVE 1: EAST END OF US 12 WITH BEVERLY DRIVE 22
- ALTERNATIVE 2: US 12 FROM LAKE STREET TO SHERIDAN AVENUE 22
- ALTERNATIVE 3: EAST AND WEST ENDS OF US 12 WITH BEVERLY SHORES LOOPS 27
- NO-ACTION ALTERNATIVE 28
- INFORMATION, SCENIC ROAD PULLOFFS, AND INTERPRETATION 28
  - Information and Scenic Road Pulloffs 33
  - Interpretation 34

OPTIONS FOR MANAGEMENT OF THE DUNES HIGHWAY 35
- OPTION 1: SCENIC HIGHWAY DESIGNATION WITH NPS OWNERSHIP OF RIGHT-OF-WAY 35
- OPTION 2: NPS OWNERSHIP OF ENTIRE SCENIC CORRIDOR 35
- OPTION 3: NPS OWNERSHIP OF ENTIRE RIGHT-OF-WAY AND PORTIONS OF THE SCENIC CORRIDOR (A COMBINATION OF OPTIONS 1 AND 2) 36
- OPTION 4: INTERGOVERNMENTAL MANAGEMENT 36

DESIGN APPROACH 37
- VISUAL ASSESSMENT 37
  - Inventory of Existing Views 37
  - Landscape Unit Analysis 38

DESIGN MODIFICATIONS 57
SAFETY 57
AESTHETIC QUALITY/DESIGN 59
DESIGN CONCEPTS 60

DESCRIPTION OF THE STUDY AREA 62
CULTURAL RESOURCES 62
Archeological Resources 62
Historic Resources 62
NATURAL RESOURCES 64
Geology 64
Topography/Soils 64
Vegetation 64
Wildlife and Fish 65
Threatened and Endangered Species 66
Water Resources/Water Quality 66
Floodplains and Wetlands 67
Air Quality 67
Noise 68
SOCIOECONOMIC FACTORS 71

ENVIRONMENTAL CONSEQUENCES 74
IMPACTS ON CULTURAL RESOURCES 74
IMPACTS ON NATURAL RESOURCES 74
IMPACTS ON VISITOR USE 76
IMPACTS ON SOCIAL AND ECONOMIC CONDITIONS 77
IMPACTS OF NO ACTION 81

ESTIMATED MAINTENANCE COSTS 87

US 12 SCENIC ROAD DEVELOPMENT QUANTITIES AND COSTS 88
ALTERNATIVE 1 88
ALTERNATIVE 2 89
ALTERNATIVE 3 91

CONSULTATION AND COORDINATION 92

APPENDIXES 93
A: OVERVIEW OF SELECTED STATE SCENIC ROAD PROGRAMS 95
B: ADDITIONAL CRITERIA FOR SCENIC ROADS AND BYWAYS 106
C: RELATED PROJECTS 108
D: INDIANA DUNES NATIONAL LAKESHORE VISITATION 110
E: TRANSPORTATION CONDITIONS 113
F: RECOMMENDED IMPROVEMENTS TO US 12 REALIGNMENT, ALL ALTERNATIVES 124
G: SCENIC ROAD INTERSECTION IMPROVEMENTS BY ALTERNATIVE 126
H: RECOMMENDED IMPROVEMENTS FOR SELECTED INTERSECTIONS IN ALTERNATIVE 2 127
I: STUDY AREA – THREATENED AND ENDANGERED SPECIES 134
J: CHARACTER OF LANDS WITHIN THE US 12 CORRIDOR 137

SELECTED REFERENCES 138

PREPARERS AND CONSULTANTS 142

MAPS

Region 2
Location 3
Land Use/Land Cover 11
Regional Recreation Facilities 13
Schematic Comparison, Alternative Scenic Road Configurations 20
Alternative 1 23
Alternative 2 25
Detail, Alternative 2 29
Alternative 3 31
Inventory of Existing Views 39
Landscape Units 41
Floodplains and Wetlands 69
Potentially Developable Lands 83
Potentially Developable Lands with Composite Zoning 85

TABLES

1: Scenic Road Pulloffs and Information Kiosks 33
2: Landscape Unit Acreage within the Potential Scenic Corridor 43
3: Population Dynamics: Lake, Porter, and LaPorte Counties, Indiana – 1970-2000 72
4: Population Dynamics for Selected Cities, Lake, Porter, and LaPorte Counties, Indiana 1970-1986 72
5: Nonagricultural Wage & Salary Employment Gary-Hammond PMSA and LaPorte County, 1987 72
6: Existing and Estimated Future Annual Accident Costs 79

INTRODUCTION

BACKGROUND

Indiana Dunes National Lakeshore is generally well served by the existing regional road and highway system. US 12 and US 20 are the major roads (see Region and Location maps). Recreational, residential, commercial, and industrial uses within the area generate a mix of vehicular traffic, including local and commuter passenger cars, recreation-related traffic, and trucks that service the Burns Harbor industrial area. As discussed in the *General Management Plan* (NPS 1980) and the *Transportation Study* (NPS 1983), traffic conflicts and safety hazards among these vehicle types are common. Continued use of US 12 for this range of diverse and often conflicting transportation modes (e.g., heavy industry and tourism) results in hazardous traffic conditions and is contrary to the national lakeshore objective – to maintain the national lakeshore's natural setting while providing a safe and quality experience for visitors.

PURPOSE OF THIS FEASIBILITY STUDY

In 1986 Congress directed the secretary of the interior to conduct "a feasibility study of establishing United States Highway 12 as the 'Indiana Dunes Parkway' under the jurisdiction of the National Park Service." This study determines the feasibility of establishing a parkway or scenic roadway managed by the National Park Service using the existing US 12 highway corridor and portions of other existing roads in the Indiana Dunes National Lakeshore area. This draft document will be revised based on public input, and the final document will be transmitted to Congress. Any further Park Service involvement would require congressional authorization.

Does the Existing US 12 Corridor Qualify as a National Parkway?

> A national parkway is a federally owned, elongated park featuring a road designed for pleasure travel, and embracing scenic, recreational or historic features of national significance. Access from adjoining properties is limited and commercial traffic is not permitted. A national parkway has sufficient merit and character to make it a national attraction and not merely a means of travel from one region to another. National parkways are authorized by special act of Congress for administration pursuant to the Act of August 25, 1916 (39 Stat. 535) as amended and supplemented. (*National Parkways Handbook*, NPS, 1964)

The existing US 12 corridor does not qualify for designation as a national parkway for two reasons – the US 12 corridor does not have sufficient merit and character to make it a national attraction, and there are many uncontrolled highway access points. Portions of the corridor clearly have high quality scenic views as well as historical significance. However, the corridor is more a connecting route between recreational, historic, and natural areas than it is a destination by itself.

Would Existing US 12 Qualify as a Scenic Road?

To determine whether US 12 would qualify as a scenic road, both the definition of and criteria for a scenic road are needed. The Park Service has no criteria or standards for what constitutes a scenic road, which led to researching what other public agencies use for criteria.

INDIANA DUNES NATIONAL LAKESHORE

URBAN DEVELOPMENT AREAS

MAJOR PUBLIC AND PRIVATE PARK AND OTHER OPEN SPACE

NORTH

REGION

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

626 • DSC • 20027D • AUG 83

LOCATION

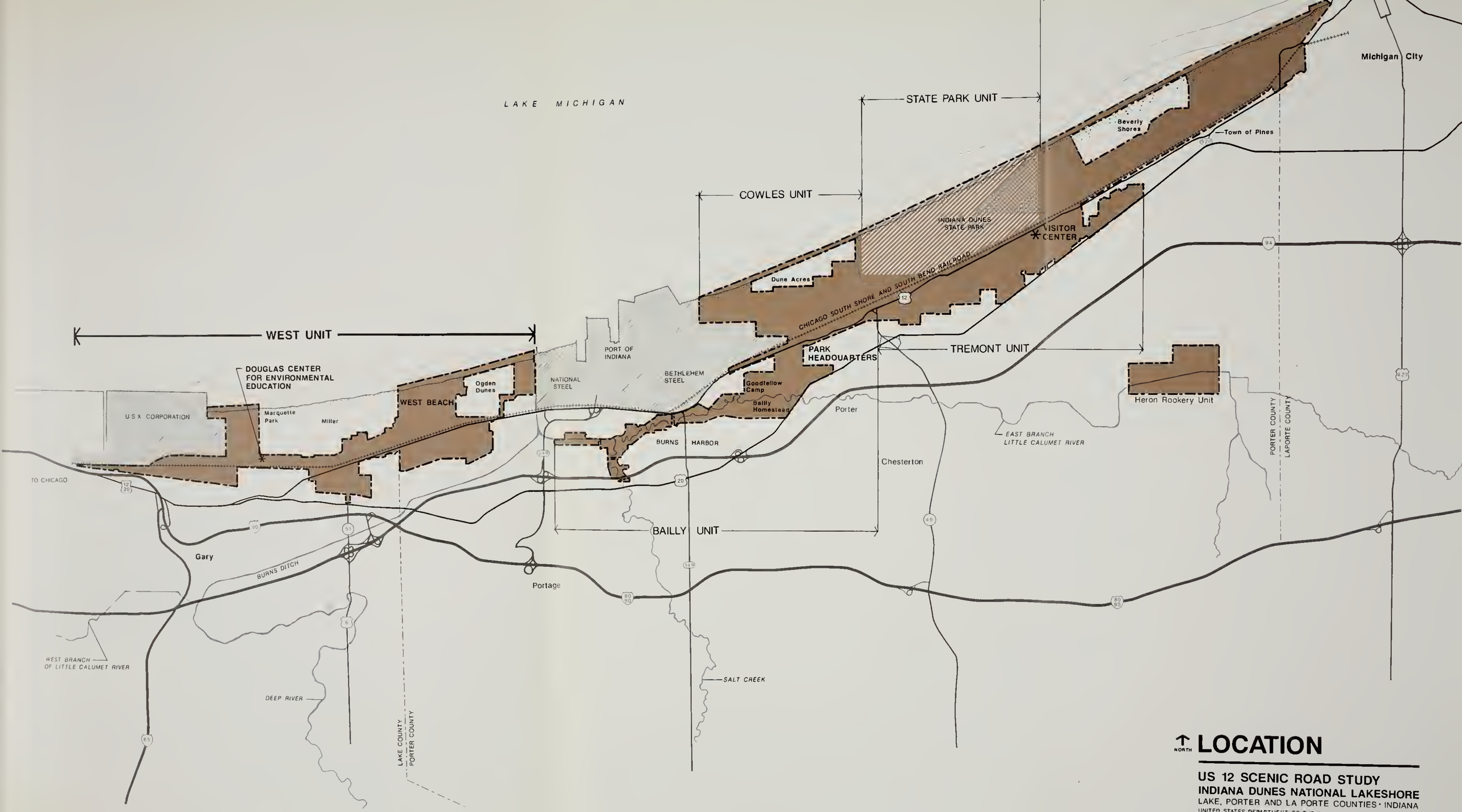
NORTH

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES · INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • 626 • 40,106A • AUG 90



LOCATION

NORTH

US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES · INDIANA
UNITED STATES DEPARTMENT OF THE

An increasing number of states are developing and implementing scenic road programs.[1] Other states have designated scenic routes but have not adopted formal programs (FHWA 1988). State scenic road programs and route designations have a great deal of latitude in their approach to scenic road criteria. Some states (like Minnesota and Wisconsin) have developed detailed criteria for designation. Other states – including Indiana – may designate scenic roads without criteria or management requirements. Criteria for scenic road designation may include requirements for

natural scenic beauty
national or statewide significance
compatible adjacent land use and zoning
a minimum of 2 miles in length
historical/cultural significance

According to these criteria, portions of the US 12 corridor would not qualify as a scenic road corridor.

There are also several federal agencies with ongoing programs that involve scenic roads and byways. The Federal Highway Administration (FHWA) has the following definition:

> A scenic road or byway has roadsides or corridors of aesthetic, cultural, or historic value. An essential part of this road is its scenic corridor. The corridor may contain outstanding scenic vistas, unusual geologic formations, dramatic urban scenes, scientific features, or other elements – all providing enjoyment for the highway traveler (Federal Highway Administration 1988).

In addition, scenic roads and byways may have complementary features that add depth, breadth, and additional meaning to recreational opportunities, including rest areas, boat-launching sites, trails, and other special facilities. Scenic roads and byways are characterized by a diversity of recreational experiences and activities; changes in terrain, landscape, and climate; and connections to specific scenic, historical, and recreational areas. (See appendix B for additional suggested FHWA criteria for scenic roads and byways).

Adjacent to a scenic road is the scenic road corridor. According to the Federal Highway Administration, the scenic road corridor is an essential feature of scenic roads and byways. Scenic corridors

- are much wider than road or right-of-way
- contain scenic and recreational areas extending beyond the right-of-way
- contain outstanding scenic vistas and facilities
- have elements extending beyond the visual corridor, such as
  - streams, lakes, and wetlands
  - unusual geological features
  - dramatic urban scenes
  - cultural and historic landmarks

According to the FHWA criteria, the US 12 corridor would qualify as a scenic road. For the purposes of this document, the broader FHWA definition of a scenic road will be used by the Park Service.

---

1. To determine the type and extent of state scenic road programs, the National Park Service conducted a review of several state scenic road programs. See appendix A for a summary of this review.

Would State Designation of a US 12 Scenic Corridor Meet NPS Objectives?

As described above, the Park Service could work with the state of Indiana to designate US 12, as it currently exists and with the current management, as a "scenic road." State designation was not further considered in this study, however, because this designation of US 12 – in name only – would not resolve the safety hazards, provide an improved experience for recreational visitors, resolve the conflicts in use patterns, or address the primary objective for the national lakeshore – to maintain the natural setting while providing for a safe and quality experience for visitors. Also, this designation by the state is not a viable solution to existing problems because although the state has a program for the designation of scenic roads, there is no accompanying program to manage scenic roads.

PROCEDURE

With the direction established by these decisions, the first task of the planning team was to identify objectives for the study. This was done by working closely with the Indiana Dunes National Lakeshore staff, the US 12 subcommittee of the Superintendent's Advisory Group, local and regional officials, and industry representatives. The Park Service then contracted with a traffic and transportation engineering firm to collect data and determine adequacy of the existing road system in the study area, make recommendations for road system modifications, and provide information about the impacts of scenic road designation. The data collection phase of the study included traffic counts, road and intersection geometry, truck origin and destinations, traffic accidents, and the visual inventory. Visual evaluation and assessment methods were also reviewed so that the existing US 12 landscape could be described and analyzed. The planning team then developed alternative scenic road alignments and management options, which are presented later in this document.

STUDY OBJECTIVES

Given that it is feasible to establish an NPS-managed scenic road within the US 12 corridor (with some modifications that are described later in the "Design Modifications" section), the following objectives for this study were established. These objectives reflect the problems and opportunities that were identified in public workshops, meetings with the US 12 subcommittee of the Superintendent's Advisory Group, and meetings with local, county, regional, state, and federal agencies and officials.

- Identify alternative ways that US 12 or US 12 and neighboring roads and highways could be developed as a safe, functional, identifiable, NPS scenic road that would connect units in the national lakeshore.
- Provide a high-quality recreational experience for visitors – the highway should have high scenic qualities as well as being a low-speed route that allows for turnoffs to recreation areas and other areas of interest and scenic and trailhead pulloffs.
- Identify ways of managing and regulating the scenic road
- Maintain, or in some areas improve, the visual quality within the scenic corridor.
- Provide interpretation of the historic, cultural, and natural resources of the road corridor.
- Retain the character of the existing landscape and viewsheds

within the scenic road corridor and the national lakeshore.

- Eliminate negative elements of the scenic roadway corridor (billboards, adjacent parking, utility poles, and truck traffic).

- Minimize negative economic impacts to adjacent communities from the development of a scenic road and from existing development in the corridor.

- Promote compatible land uses and land management strategies for future development along the road corridor to ensure the protection and preservation of natural/cultural resources.

- Determine what facilities (restrooms, pulloffs, parking areas, signs, interpretive facilities, recreation facilities) may be necessary while considering existing facilities and use.

STUDY AREA

With these objectives in mind, the NPS planning team defined a specific area that they would need to study to determine what specific route or combination of routes could be used as a scenic road. The study area includes the 25-mile long US 12 corridor from the intersection of US 20 and US 12 in Gary on the west to Michigan City on the east (see previous Location map). The study area also includes Beverly Drive, Kemil Road, and Broadway Avenue (in the town of Beverly Shores), and Central Avenue and Lakeshore County Road in the Town of Pines). These routes add an additional 7 miles of roadway to the corridor under study. The potential scenic corridor (seen area or viewshed) from US 12 to the north and south of the existing US 12 right-of-way is also part of the study area. (See "Design Approach - Visual Assessment" section for a definition of potential scenic corridor.)

The study area also includes US 20 (the primary parallel route to US 12) as well as the north-south routes that connect US 12 and US 20 because they are possible alternate routes for through traffic and trucks that use US 12. The adjacent and connecting routes also directly relate to traffic safety at intersections with US 12 as well as being potential alternate routes for industrial-area-related traffic. The major US 12/US 20 connecting routes are Indiana state highways 51, 49, 149, 249, and 520, and Lake/Porter and Porter/LaPorte county line roads.

There are other road improvement projects proposed that relate to this scenic road feasibility study; these projects are listed in appendix C.

To do a comprehensive study for establishing a scenic road corridor, the national lakeshore and the area under consideration (the study area just described) must be considered in relation to the regional setting and to the relevant existing resources, facilities, and traffic conditions.

REGIONAL CONTEXT AND SIGNIFICANCE

The National Lakeshore

Indiana Dunes National Lakeshore is in Lake, Porter, and LaPorte counties of Indiana – about 35 miles southeast of Chicago, Illinois. Containing about 14,000 acres, including some 15 miles of Lake Michigan shoreline, the national lakeshore runs for nearly 25 miles along the southern end of Lake Michigan. Bordered by Michigan City, Indiana, on the east and Gary, Indiana, on the west, the national lakeshore is also within or adjacent to the towns of Portage, Burns Harbor, Porter, Chesterton, and the Town of Pines. In addition, the national lakeshore completely surrounds the communities of Ogden Dunes, Dune Acres, and Beverly Shores. The nearby cities provide restaurants, motels, gasoline, services, and employment. The smaller towns and enclaves have only limited services, generally centered on tourist trade or the convenience of the residents. A large percentage of the national lakeshore's visitors come from the south suburban area of Chicago.

The national lakeshore lies within the major urban industrial complex of the Midwest. Scattered and mixed within and adjacent to the national lakeshore's boundary are residential areas, open rural areas, steel mills, light industries, and agricultural lands. There is a complex transportation system of county, state, and interstate roads that carry local and heavy industrial traffic as well as numerous railroad trains carrying manufactured products, commuter passengers, and travelers throughout the region.

Established in 1966, Indiana Dunes National Lakeshore was one of the first areas proposed for national lakeshore status. The national lakeshore contains fragile and significant natural and cultural resources – miles of beaches, sand dunes, wetlands, and woodland forests combine to make the natural resources in the national lakeshore unique in this urban/industrial setting. Natural wetlands, dune bluffs and ridges, successional vegetation, climax oak forests, and beaches typify the visual qualities of the national lakeshore. The principal cultural resources are the Bailly Homestead (settled in 1822), the Chellberg Farm, five homes originally displayed at the 1933 Chicago World's Fair, and three experimental prefabricated houses built by the Lustron Corporation.

The wetlands and dune succession communities in the national lakeshore and surrounding areas are scientifically significant to the field of ecology. The concept of plant succession as developed by Henry Chandler Cowles in the 1890s-1930s had its origin in the national lakeshore area. Complete vegetative succession – from the open beaches to the climax oak forest – is represented in the Miller Woods Unit of the national lakeshore. The interdunal ponds in the Miller Woods area are excellent examples of aquatic community succession. Pinhook Bog and Cowles Bog are exemplary for their habitat types in the central midwest (NPS 1987). Another major feature is Mount Baldy, the national lakeshore's largest active dune. Immediately inland from the beaches, sand dunes rise to almost 200 feet in a series of ridges, blowouts, and valleys. Extensive wetlands fill the depressions between the dunes.

Indiana Dunes National Lakeshore offers outstanding vegetative and wildlife resources. The dunes are a meeting place of northern and southern prairie and woodland species – "the common meeting ground of trees and wild flowers from all directions" (Engel 1983). The diversity of environmental plant communities makes the region an important wildlife habitat area.

The US 12 Corridor

The US 12 corridor is about 25 miles long, extending from Gary, Indiana, on the west to Michigan City, Indiana, on the east. US 12 passes through the West[2], Bailly, Cowles, Tremont, State Park, and East units of the national lakeshore. US 12 is connected to a well-developed network of regional and national highways, including Interstates 65, 80, 90, and 94; US 20; and Indiana state highways 49, 51, 149, 249, and 520 (hereafter referred to as IN 49, IN 51, etc.).

Except for about 4 miles of four-lane highway along US 12 between just west of the Bethlehem Steel east gate and just west of the Portage-Burns Waterway, the entire route under study is a two-lane, hard-surfaced, all-weather roadway. Only the four-lane segment has paved shoulders. The roadway alignment is generally level and straight, with long and gradual curves. US 12 generally has one intersection per half mile, but there are also areas along this route through rural residential, commercial, or village areas where the intersections exceed two or three per quarter mile. Also along US 12 are several intersections with short sight distances due to nearby steep topography or dense vegetation.

Land uses along the corridor include agriculture, residential homes (single-family, multifamily, and mobile homes), large- and small-scale commerce, light to heavy industry, public uses, and open space/recreation. Developed areas exist along the routes for the length of the study area, but most of the land is wetland, dunes, and forest. There are large industrial areas in the middle and at both ends of the corridor. At Gary, USX Corporation has a major steel mill/port complex. The Burns Harbor industrial area includes National Steel (Midwest Division), the Port of Indiana, the Northern Indiana Public Service Company's (NIPSCO) Bailly power generating facility, and Bethlehem Steel. At the east end is the Michigan City power generation plant and the Michigan City industrial/commercial area. Paralleling the US 12 route are high voltage power lines and several sets of railroad tracks. The railroads carry freight and commuter rail and interstate passengers. There are seven commuter stations along this 25-mile corridor, complete with parking and other facilities. Also along this route are small development areas of low-density rural residences and small service/retail areas at Beverly Shores and the Town of Pines. The remaining areas along the US 12 corridor are relatively undeveloped and are used mostly for recreation and tourism. About 35 percent of the corridor goes through developed areas and about 65 percent goes through natural (undeveloped) environment (see Land Use/Land Cover map).

Parallel to the US 12 corridor is US 20, a four-lane undivided highway, which has been designated by the Indiana legislature as "Michigan train route." "Michigan trains" are multiaxle, tandem, very heavily loaded steel-hauling

---

2. The West Unit of the national lakeshore was designated as the Paul H. Douglas Ecological and Recreational Unit. For practical purposes, the unit will continue to be referred to as the West Unit in this document.

trucks. These vehicles are not permitted on the interstate highway system except in Michigan. Therefore, individual states designate routes for these sorts of trucks where they can be best accommodated. US 20 is never more than 5 miles from US 12, and the two routes converge in Gary to be a dual-designated highway (US 12/20) through Gary and on into Illinois.

Of the connecting routes between US 12 and 20, IN 49, IN 149, and IN 249 are divided four-lane highways that provide access to interstate highways 80, 90, and 94. IN 49 has a short (less than 1 mile) two-lane segment between US 12 and 20. IN 520 is a 1/4 mile, four-lane, undivided connection between US 12 and 20 in the Town of Pines.

EXISTING RECREATION FACILITIES WITHIN THE STUDY AREA

Various entities, including the federal government, the state of Indiana, and several communities, have developed and maintained recreation and park areas along the route.

There are many existing recreation and historic facilities within or near the US 12 corridor (see Regional Recreation Facilities map). The following is a partial list of selected public recreation areas.

Marquette Park, operated by the city of Gary, provides day-use facilities including parking, picnicking, swimming beaches, a boat ramp, a snack bar, restrooms, tennis courts, a baseball diamond, and a fitness trail to the west-end urbanized areas of Gary and Miller.

Wells Street Beach is a privately owned and operated 2-acre beach with a bathhouse, concessions, and parking for 100 cars.

Indiana Dunes State Park provides parking, a swimming beach, a snack bar, restrooms, camping facilities, nature trails, picnicking, and cross-country skiing.

Washington Park (LaPorte County) is a 99-acre park that is owned and maintained by Michigan City. There is parking for approximately 600 cars, 3,000 feet of beach on Lake Michigan, marina access, and a zoo.

Indiana Dunes National Lakeshore straddles US 12, skirting the numerous towns and developments and providing a natural corridor of beaches, dunes, wetlands, and forests that are divided into several distinct recreation areas.

West Unit

The Douglas Center for Environmental Education provides trails, tours, and interpretive displays on the natural evolution of the area.

West Beach provides a swimming beach, restrooms, a snack bar, parking, information, first aid, and nature trails.

Inland Marsh provides parking for several trails that lead through natural dune, woodland, and wetland areas.

Tolleston Dunes is a natural, undeveloped area.

Long Lake and its wetlands is a low-lying area of nature trails abutting West Beach.

East Unit

The Bailly Homestead/Chellberg Farm development provides historic sites and structures to illustrate the development of the region. Parking, information, and nature trails are available at these sites.

- WATER / STREAM
- TERRESTRIAL SHRUB / UPLAND FOREST
- AGRICULTURE / GRASS
- SHRUB / MARSH / FORESTED WETLANDS
- SAND
- RESIDENTIAL
- MIXED COMMERCIAL / RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- NO INFORMATION AVAILABLE

N

0 1 2 MILES

0 1 2 KILOMETERS

LAND USE/ LAND COVER

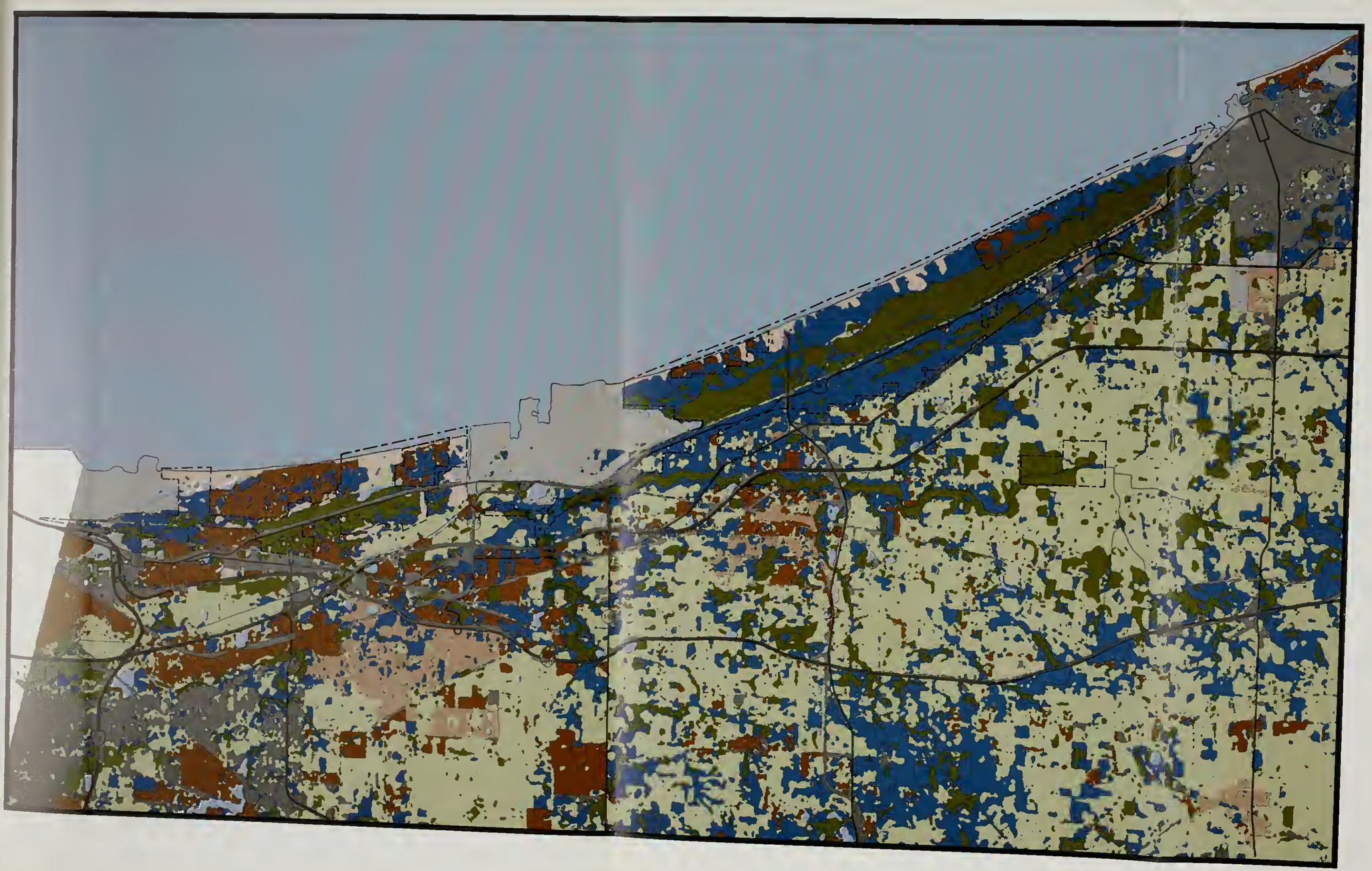
US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 90 • 626 • 40110



WATER / STREAM

TERRESTRIAL SHRUB / UPLAND FOREST

AGRICULTURE / GRASS

SHRUB / MARSH / FORESTED WETLANDS

SAND

RESIDENTIAL

MIXED COMMERCIAL / RESIDENTIAL

COMMERCIAL

INDUSTRIAL

NO INFORMATION AVAILABLE

N

0 1 2 MILES

0 1 2 KILOMETERS

LAND USE/ LAND COVER

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 90 • 626 • 40110

WATER / STREAM

INDIANA DUNES NATIONAL LAKESHORE

STATE PARK OR PRESERVE

CITY PARK

OTHER DESIGNATED OPEN SPACE

ABANDONED RAILROAD CORRIDORS

NORTH

0 1 2 MILES

0 1 2 KILOMETERS

REGIONAL RECREATION FACILITIES

US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

DSC • 626 • 20,085 • JUNE 90

WATER / STREAM

INDIANA DUNES NATIONAL LAKESHORE

STATE PARK OR PRESERVE

CITY PARK

OTHER DESIGNATED OPEN SPACE

ABANDONED RAILROAD CORRIDORS

NORTH

0 1 2 MILES

0 1 2 KILOMETERS

REGIONAL RECREATION FACILITIES

US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DSC • 626 • 20,085 • JUNE 90

The Little Calumet River provides fishing, nature trails, and canoeing. It also links to other trail systems in the Bailly Homestead area.

Cowles Bog is a natural dune/wetland area that is open for guided tours.

Tremont picnic area, in a natural, wooded area with adjacent wooded wetlands, has picnic tables and restrooms.

Ly-co-ki-we Trail provides parking, horse trails, picnicking facilities, restrooms, and cross-country skiing trails.

The Indiana Dunes National Lakeshore visitor center provides parking, restrooms, first aid, information, and educational exhibits and trails.

Kemil Beach is a swimming area with parking facilities, restrooms, and first-aid services.

Lake View is a new Lake Michigan overlook in the town of Beverly Shores; restrooms, parking, picnicking, and beach access are provided.

Central Avenue Beach provides parking for swimmers, first-aid services, and restrooms.

Mount Baldy is a large dune at the east end of the national lakeshore. Facilities there include nature trails, parking, restrooms, and snack bar.

The units of the Indiana Dunes National Lakeshore are linked by the US 12 corridor and several trail systems within each unit. The trails also link with the surrounding parks and recreation areas outside the national lakeshore, bringing the bulk of the 25 miles of Lake Michigan shoreline together as a large-scale recreation network serving local, regional, and national visitors.

WHAT VISITORS SEE WHILE TRAVELING ON US 12

Along US 12 there are several dune ridges, each of which was formed in a different time period. These dunes may be totally bald sand hills or heavily wooded hills, depending on their age and stage of evolution. The most recent dunes, 1/4 to 3/4 mile from US 12, form the northern horizon. The older dunes are generally immediately north and south of US 12. Portions of the dunes are nearly 200 feet high.

The foreground of the dunes on the north side is mostly wetlands, displaying the varieties of flora and fauna common to such environments. The wetlands may be open marshes or heavily wooded areas. There are also areas of open water, such as Long Lake and the several streams and rivers that dissect the area. Inland Marsh, Long Lake wetland, and Long Lake typify the wetland systems.

Generally, US 12 may be viewed as a low, narrow corridor bounded on the north and south by dunes and with its center a grassland, mature oak forest, marsh, or lake. Significant portions of the US 12 corridor are still in a natural dune/wetland state.

Prominent features along the corridor are the heavy industries. These include international ports, power generation plants, and steel mills at the east end, the center, and the west end of the US 12 corridor. USX Corporation, National Steel (Midwest Division), and Bethlehem Steel, visible from US 12, dominate the industrial complexes along the Lake Michigan shore. The diversity of these industries, combined with the natural areas, demands the viewer's attention and interest. The railroads, power lines, and support industries reinforce the display of commerce and industry. Along US 12, motorists are very aware of the number of tractor-trailer trucks carrying steel and other products.

TOURISM

Regional

The region surrounding the national lakeshore, like much of the industrial Midwest, has experienced significant economic and demographic changes during the 1980s. A downturn in the automobile industry caused a parallel drop in the demand for steel and related products. At the same time, many factories and mills began to streamline operations to remain economically viable. This recession precipitated significant changes in the economy of northwestern Indiana, which is highly reliant on heavy industry. Although industry continues to be the mainstay of the regional economy, local businesses and governments have made concerted efforts to create a more diverse and resilient economic base, an important component of which has been an increased emphasis on promoting tourism.

Lake Michigan and its sandy beaches and dunes have been popular with vacationers and recreationists for many years. The lake offers many opportunities for such outdoor recreation pursuits as fishing, sailing, powerboating, swimming, and beachcombing. The scenic beauty of the area creates a wonderful setting to play or to do nothing at all. Local chambers of commerce and businesses have long promoted the recreational opportunities and picturesque vistas of Lake Michigan to entice visitors into the area. In recent years, however, promotion of northwestern Indiana as a tourism destination has become increasingly important to the health of the local economy.

Northwestern Indiana offers various other leisure-time opportunities in addition to the many recreation pursuits associated with Lake Michigan. There are many publicly and privately owned recreation facilities, and northwestern Indiana is a part of the Lake Michigan Circle Tour, a 1,100-mile motor-tour route that circles Lake Michigan. The tour is a cooperative initiative that is supported by the tourism industry and agencies in the four states that surround the lake. The tour route follows established trunk highways that are close to the lake and is marked by signs with a distinctive logo that are posted every 10 miles (or more often when necessary). Promotion of the tour is primarily the responsibility of local communities and nonprofit organizations. Private tourism-based businesses can associate themselves with the tour in their advertising efforts. Several route guides have been published by nonprofit groups.

In northwestern Indiana, the Lake Michigan Circle Tour follows I-90 from the Illinois border east to US 12, and then follows US 12 east to the Michigan state line, traversing Indiana Dunes National Lakeshore along US 12. Local tourism groups have created a number of secondary "spur" routes that connect the tour to additional points of interest. The spur routes in Lake County are I-65 south to US 30, US 41 south to Crown Point, and US 41 north to East Chicago; in Porter County the spur routes are IN 249 south to Central Avenue in Portage, IN 49 north to Dunes State Park, and IN 49 south to US 30; and in LaPorte County the spur routes are US 35 south to LaPorte and Washington Boulevard south into Michigan City.

According to statistics compiled by the West Michigan Tourist Association (WMTA), during 1988 almost 80 percent of the requests for WMTA's Circle Tour guide came from residents of Illinois, Indiana, Michigan, Ohio, and Wisconsin (WMTA 1989). Over 38 percent of the requests for the guide came from Illinois.

An initiative is being considered that would connect the Lake Michigan Circle Tour with similar touring routes around the other Great Lakes and segments of the St. Lawrence River. If successfully implemented, this Great Lakes Circle

Tour would further encourage tourism in northwestern Indiana, the lakes states, and the Canadian provinces of Ontario and Quebec (personal correspondence with Gary Fischer, President, West Michigan Tourist Association, Grand Rapids, MI, July 1989).

National Lakeshore Visitation

Since its designation as an unit of the national park system in 1966, the recreational use of Indiana Dunes National Lakeshore has grown dramatically. The lakeshore has become a very popular destination for recreationists from metropolitan Chicago, northern Indiana, the Midwest, and the nation. Visitation to Indiana Dunes reached an all-time high in 1988 – more than 1.88 million people.

Visitors to the lakeshore can participate in diverse recreational pursuits. Water-based pastimes such as swimming, fishing, and boating are among the most popular summer activities. Hiking, dune exploration, and nature study are also quite popular. Currently, there are no overnight facilities within the national lakeshore. An NPS-owned and operated campground is currently being designed for a 182-acre site between US 12 and US 20, south of the Broadway Avenue and US 12 intersection. Year-round camping is available at Indiana Dunes State Park and at local commercial campgrounds. Wintertime activities in the national lakeshore include cross-country skiing and snowshoeing (limited due to poor snow conditions in recent years); snowmobiling is not allowed.

Visitation to the national lakeshore has increased steadily through the 1980s. The average annual growth in visitation for the years 1981-88 was 8.9 percent. Total visitation to the national lakeshore in 1988 was 47.8 percent greater than in 1981 (see appendix D). About 50 percent of total annual visitation to the national lakeshore is in June, July, and August. More than 72 percent of total annual use occurs between May and September. Only 6 percent of the annual visitation occurs between December and February. July is the peak-use month, with about 16 percent of the total annual visitation. Within the national lakeshore, West Beach and Mt. Baldy have the highest level of visitation. In 1988 these two areas accounted for 18 percent and 13 percent of total lakeshore visitation respectively. See appendix D for summaries of recreation visitation, monthly distribution of visitation, and relative distribution of lakeshore use at Indiana Dunes.

EXISTING TRAFFIC CONDITIONS

The Indiana Dunes National Lakeshore is accessible by several federal and state highways (see figures 2-1A and 2-1B in appendix E).

US 12 is primarily a two-lane road with a short four-lane section near the intersections with IN 249 and Oak Hill Road. Traffic controls consist of stop signs on intersecting streets, an eastbound stop sign at IN 520, four-way stop signs at Clay Street and Lake/Porter County Line Road, and traffic signals at US 20, Lake Street, National Steel, Bethlehem Steel east gate, and Broadway Avenue. Existing speed limits range from 30 miles per hour (mph) between US 20 and Lake Street in Gary to 55 mph in Burns Harbor. The speed limit for the majority of US 12 is 45 mph (see figures 2-3A and 2-3B in appendix E).

US 20 is a four-lane roadway with left-turn lanes at several intersections. Traffic controls consist of stop signs on intersecting streets and traffic signals at US 12, Clay Street, Lake Street, Hobart Road, IN 51, Lake/Porter County Line Road, Willow Creek Road, IN 249, and IN 149. Existing speed limits range from 40 mph in Gary to 55 mph from Tremont to Michigan City.

Traffic counts for roads within the study area were collected from many sources. The National Park Service operates automatic traffic counters at three locations on US 12 and at Furnessville Road and Kemil Road. In addition, 48-hour counts were conducted at 10 locations throughout the national lakeshore in August 1988. Supplemental 48-hour counts were conducted in June 1989 at 41 locations. The third source of traffic counts, the Indiana Department of Transportation (INDOT), provided traffic count information for selected points along US 20. Average daily traffic volumes on US 12 for the summer of 1989 range from 6,680 vehicles in the western portion, 12,950 vehicles through Burns Harbor, and 7,770 vehicles in the Town of Pines. Average daily traffic volumes on US 20 range from 21,500 vehicles near IN 51 and 11,330 vehicles just east of IN 520. (See figures 2-2A and 2-2B and table A-1 in appendix E.)

In addition to the total daily vehicle counts, an analysis of truck travel patterns was conducted. Truck traffic was determined to range from 5 to 16 percent of total traffic on US 12 and 10 to 21 percent of total traffic on US 20.

Pavement conditions within the study area are generally fair, based on the state road inventory that is conducted by the Indiana Department of Highways. The fair pavement condition category indicates riding qualities are noticeably inferior to those of new pavements. Surface defects may include rutting, cracking, and more or less extensive patching. The only US 12 road segment with a poor rating, indicating the need for resurfacing, is the segment between IN 520 and Porter/LaPorte County Line Road. Most of Beverly Drive is in the fair to poor category. See figures 2-4A, 2-4B, and table 2-3 in appendix E for pavement condition ratings for the study area roads and a description of the pavement condition ratings.

Traffic accident data were compiled from INDOT, Porter County, Beverly Shores, Burns Harbor, and Gary. These data were used to identify hazardous intersections and to make recommendations for improved intersection design and operation.

An analysis of existing intersection operations was conducted for 40 intersections in the study area using a computer program developed by the Federal Highway Administration as well as procedures contained in the *Highway Capacity Manual*. The following six intersections were found to have operational delays of more than 40-60 seconds per vehicle, which is considered to be the upper limit of acceptable delay:

US 20 and Lake Street
IN 51 and Hobart Road
US 12 and IN 249
US 12 and IN 149
US 12 and IN 49
US 20 and IN 520

For a detailed discussion of existing traffic conditions see the 1989 *Transportation Study* prepared for the National Park Service by Traffic Engineers, Inc.

STOP

SLEEP DISORDERS CENTER
392-7666

SCHEMATIC COMPARISON

ALTERNATIVE SCENIC ROAD CONFIGURATIONS

INDIANA DUNES NATIONAL LAKESHORE

DSC • Aug 90 • 626 • 40114

SCENIC ROAD ALTERNATIVES

The following section describes four possible alternative segments and alignments, including a no-action alternative, for establishing a scenic road (see facing page for a schematic representation of the three action alternatives). These US 12 road segments and routes through Beverly Shores are one component of scenic road designation. The scenic road segment alternatives must be combined with scenic road management and scenic road design modifications, which are discussed in following sections.

Several different names and designations were considered for the scenic road. Names considered include Indiana Dunes Scenic Highway, Dunes Parkway, Old Chicago-Detroit Road, Calumet Trail, and Indiana Dunes Scenic Road. However, the designation that best describes the US 12 corridor is Dunes Highway, which is the historical designation of US 12 that was made in November 1923 by the Dunes Highway Association. The monument commemorating this designation still stands in the grassed area within the access ramp at IN 49 and US 12.

Following NPS policies, under any of the three action alternatives, trucks would not be permitted on the scenic road (except for access to communities where no access alternative exists). Trucks are defined as commercial vehicles exceeding 9,000 pounds gross vehicle weight (vehicle and load weight). Pickup trucks, trucks making local deliveries, utility company and railroad trucks needing access for maintenance and repairs, commuter vehicles, and recreational vehicles would be allowed on the Dunes Highway.

The maximum speed permitted on the scenic road would be 35-45 mph (less near recreational areas and major intersections or for safety reasons). A bike lane or bike path would be established along or near the Dunes Highway (see draft *Little Calumet River Corridor Plan* (NPS 1990b) for a discussion of bike lanes and paths). The entrances to the scenic road and the national lakeshore would be identified with signs and landscaping. Also, under any of the action alternatives, the scenic route designated would remain part of the Lake Michigan Circle Tour.

Appropriate boundary adjustments would be made for rights-of-way and scenic corridors, depending on which alternative was chosen. These adjustments, which would include the scenic road within the national lakeshore boundary under the three action alternatives, would be necessary for law enforcement and maintenance of the US 12 corridor after its designation as the Dunes Highway scenic road.

Implementation of scenic road designation would require the improvement of intersections identified under each alternative. The responsibility for these modifications would be shared by the Park Service and local, state, and other federal agencies. Implementation of the scenic road could be done in phases as funding is available for intersection improvements and NPS operation and maintenance of the scenic road.

Where existing through-traffic routes are determined to have adverse impacts on national lakeshore purposes and values, the National Park Service would work with federal, state, and local agencies to minimize the impacts or to have the routes closed or removed. Commercial traffic, except for the purpose of serving visitors and NPS operations, will be prohibited on roads within the national lakeshore wherever possible. Where such closure is not possible, the Park Service will work with appropriate government agencies and private organizations and individuals to minimize

the impacts of such traffic (NPS *Management Policies* 9:8).

Also, under any of the following action alternatives, a plant materials/revegetation program would be developed. The goal of this program would be to develop low-maintenance, indigenous plants that are adaptive to disturbed sites.

ALTERNATIVE 1: EAST END OF US 12 WITH BEVERLY DRIVE

Under alternative 1, the Dunes Highway scenic road corridor would follow the existing US 12 alignment from IN 520 to the entrance road to Bethlehem Steel east gate; another segment of the scenic road would go through portions of the town of Beverly Shores by proceeding north on Broadway Avenue from the current US 12 alignment and continuing east on Beverly Drive to the intersection with US 12 (see Alternative 1 map and appendix F).[3] US 20 and IN 520 would be redesignated as the new US 12 (overlapping designation), which would continue to the existing US 12/US 20 junction in Gary. The existing segment of US 12 that runs from the east gate of Bethlehem Steel to its intersection with US 20 in Gary would be designated as a new state route.

Under this alternative, the following intersections would be redesigned and improved to facilitate traffic flow and resolve safety concerns (see also appendix G for a comparison of the intersections improved in the various alternatives).

US 12 and IN 249
US 12 and IN 149
US 12 and IN 49
US 12 and Furnessville Road
US 12 and Kemil Road
US 12 and Broadway Avenue
US 12 and Lakeshore County Road
US 12 and IN 520
US 12 and Beverly Drive
Beverly Drive and Lakeshore County Road
Beverly Drive and Broadway Avenue

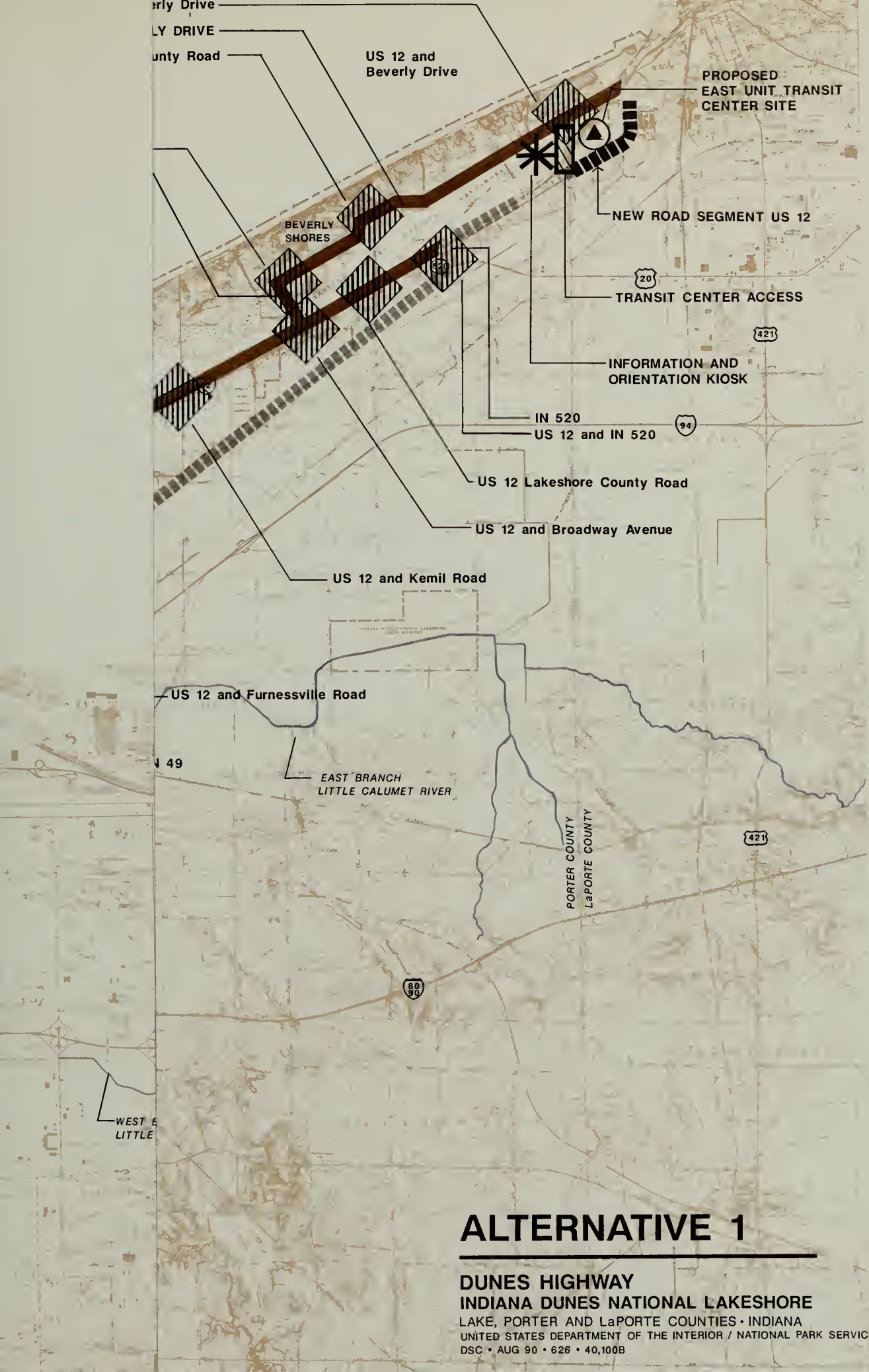
There would be interpretive pulloffs at Tremont picnic area and Bailly Cemetery; there would also be an information/orientation kiosk near the eastern national lakeshore boundary. These pulloffs are described in the "Information, Scenic Road Pulloffs, and Interpretation" section.

The principal landscape unit within this alternative would be natural enclosed; the natural open (wetlands) and roadside commercial landscape units would also be included (see "Design Approach – Landscape Unit Analysis" section for a discussion of the landscape units).

ALTERNATIVE 2: US 12 FROM LAKE STREET TO SHERIDAN AVENUE

Under alternative 2, the Dunes Highway scenic road corridor would follow the existing US 12 alignment from the eastern national lakeshore boundary to Lake Street in Gary (see Alternative 2 map). The northern two lanes of the four-lane divided segment of US 12 (between just west of the Bethlehem Steel east gate and the Portage-Burns Waterway) would be designated as a new state route, which would carry all truck traffic to and from the industrial area. The southern two lanes would be designated as the Dunes Highway (carrying no truck traffic). A new 3,200-foot segment of two-lane roadway would be constructed between the east end of the four-lane segment and Bethlehem Steel's east gate so that the state route

3. With the exception of the Beverly Drive addition, this alternative is essentially the recommendation from the 1983 NPS *Transportation Study*.



ALTERNATIVE 1

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40,100B

ALTERNATIVE 1

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES · INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40,100B

ALTERNATIVE 2

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40,101B

LAKE MICHIGAN
INTERSECTIONS TO BE IMPROVED
INFORMATION / INTERPRETATION SITE
SCENIC RDUTE (Dunes Highway)
REDESIGNATED US 12 RDUTE
NEW STATE ROUTE
NEW RDAD SEGMENT
US 12 and Beverly Drive
INFORMATION AND ORIENTATION KIOSK
PROPOSED EAST UNIT TRANSIT CENTER SITE
BROADWAY AVENUE
US 12 and Kemil Road
US 12 and Furnessville Road
TREMONT PICNIC AREA
BAILLY CEMETERY
US 12 and IN 49
BETHLEHEM STEEL EAST GATE
US 12 and Bethlehem Steel east gate
US 12 and Oak Hill Road
PORTAGE / BURNS WATERWAY
LONG LAKE WETLANDS OVERLOOK
LAKE STREET
US 12 and Lake/Porter County Line Road
INDUSTRIAL OVERLOOK
US 12 and IN 249
US 12 and Bethlehem Steel main gate
US 12 AND IN 149
US 12 and National Steel entrance
SALT CREEK
BURNS DITCH
DEEP RIVER
WEST BRANCH OF LITTLE CALUMET RIVER
LAKE COUNTY
PORTER COUNTY
INFORMATION AND ORIENTATION KIOSK
US 12 and Lake Street
BEVERLY SHORES
NEW ROAD SEGMENT US 12
US 12 and IN S20
US 20 and IN S20
US 12 and Lakeshore County Road
US 12 and Broadway Avenue
EAST BRANCH LITTLE CALUMET RIVER
PORTER COUNTY
LaPORTE COUNTY
ALTERNATIVE 2
DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LaPORTE COUNTIES • INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL

with truck traffic would not conflict with the Dunes Highway.

Existing US 20 from the LaPorte/Porter county line to its junction with US 12 in Gary would be redesignated as US 12/US 20 (overlapping designation). Porter/LaPorte County Line Road would be improved, widened, and redesignated as US 12 from its junctin with US 20 to the existing US 12, the new US 12 would go northeast along Woodlawn Avenue and then north to the intersection with existing US 12 along a route that parallels but is just west of Sheridan Avenue (see appendix F; see also August 1989 *East Unit Access Road and US 12 Relocation Environmental Impact Statement* by Federal Highway Administration, Report No. FHWA-IND-EIS-87-02-F).

Under this alternative, the following intersections would be redesigned and improved to facilitate traffic flow and resolve safety concerns (see Detail, Alternative 2 map; see also appendix G for a comparison of the intersections improved in the various alternatives and appendix H for details of selected road intersection improvements related to this alternative):

- US 12 and Lake Street
- US 12 and Lake/Porter County Line Road
- US 12 and National Steel entrance
- US 12 and IN 249
- US 12 and IN 149
- US 12 and Oak Hill Road
- US 12 and Bethlehem Steel main gate
- US 12 and Bethlehem Steel east gate
- US 12 and IN 49
- US 12 and Furnessville Road
- US 12 and Kemil Road
- US 12 and Broadway Avenue
- US 12 and Lakeshore County Road
- US 12 and IN 520
- US 12 and Beverly Drive
- US 20 and IN 520

Interpretive pulloffs would be established at Tremont picnic area, Bailly Cemetery, an overlook of the industrial area, and Long Lake wetland; information/orientation kiosks would be established at the truck terminal site near the US 12 bridge over Hobart Road (near western national lakeshore boundary along US 12) and on US 12 near the eastern national lakeshore boundary. These pulloffs are described in the "Information, Scenic Road Pulloffs, and Interpretation" section.

This alternative would include the greatest diversity of landscape units, with major segments of natural open on the western end of the corridor, industrial in the central portion, and natural enclosed in the eastern portion (see "Design Approach – Landscape Unit Analysis" section for a discussion of the landscape units).

ALTERNATIVE 3: EAST AND WEST ENDS OF US 12 WITH BEVERLY SHORES LOOPS

Under alternative 3, the Dunes Highway would follow the existing US 12 alignment from the eastern national lakeshore boundary on US 12 to the Bethlehem Steel east gate on the west; a second segment of the Dunes Highway would be established from the intersection of IN 249 and US 12 to the junction of US 12 and US 20 (see Alternative 3 map). Truck travel would not be allowed on either Dunes Highway segment. The section between the Bethlehem Steel east gate and IN 249 would be designated as a new state route; trucks would be allowed on this new state route.

Northward loop extensions of the Dunes Highway would be established in the town of Beverly Shores on Kemil Road, Broadway Avenue, Lakeshore County Road, and Central Avenue. These extensions would all connect to Beverly Drive, thus forming four possible scenic loops from the Dunes Highway.

The current US 20 alignment, with the rerouting on the eastern section as described in alternative 2, would be designated as US 12/US 20. The realignment of US 12 would be the same as described under alternative 2 (along an improved, widened, Porter/LaPorte County Line Road (see appendix F).

Under this alternative, the following intersections would be redesigned and improved to facilitate traffic flow and resolve safety concerns (see also appendix G for a comparison of the intersections improved in the various alternatives):

- US 12 and US 20
- US 12 and Clay Street
- US 12 and Lake Street
- US 12 and Lake/Porter County Line Road
- US 12 and IN 249
- US 12 and IN 149
- US 12 and Bethlehem Steel east gate
- US 12 and IN 49
- US 12 and Furnessville Road
- US 12 and Kemil Road
- US 12 and Broadway Avenue
- US 12 and Lakeshore County Road
- US 12 and IN 520
- US 12 and Beverly Drive
- Beverly Drive and Lakeshore County Road
- Beverly Drive and Broadway Avenue
- Beverly Drive and Kemil Road
- US 20 and IN 520

There would be interpretive pulloffs at Tremont picnic area, Bailly Cemetery, and Long Lake wetland; information/ orientation kiosks would be established at the truck terminal site near the US 12 bridge over Hobart Road (near the western national lakeshore boundary along US 12) and near the eastern national lakeshore boundary. These pulloffs are described in the "Information, Scenic Road Pulloffs, and Interpretation" section.

This alternative would include natural open landscape units in the western portion of the corridor and the same landscape units in the eastern portion as in alternative 1 (see "Design Approach – Landscape Unit Analysis" section for a discussion of the landscape units).

NO-ACTION ALTERNATIVE

Under this alternative, no action would be taken to designate a scenic road, and no action would be taken to address safety hazards on US 12. This alternative reflects a continuation of existing conditions and is presented to establish a baseline against which to compare the action alternatives described previously and with which to assess the impacts of continuing the present course of action.

INFORMATION, SCENIC ROAD PULLOFFS, AND INTERPRETATION

Indiana Dunes National Lakeshore is composed of several diverse, noncontiguous units. Taken together these units exhibit the rich diversity of ecosystems represented in the national lakeshore and provide excellent opportunities for studying plant and animal life. Each unit has its own primary theme as well as subthemes that overlap with other units. For example, West Beach is primarily visited for recreation, but it is an excellent place to observe dune ecology, the effects of human use on the dunes, and wetland ecology. Other units individually or collectively exhibit succession from bare beach to climax hardwood forest, settlement and use by different cultures, and evidence of geologic events that shaped the Great Lakes.

One goal of scenic road designation is to connect the units of the national lakeshore with a transportation corridor that would enhance understanding of the relationship of the units to each other and of the national lakeshore as a whole. The scenic road corridor connecting the units would allow visitors

DUNES HIGHWAY

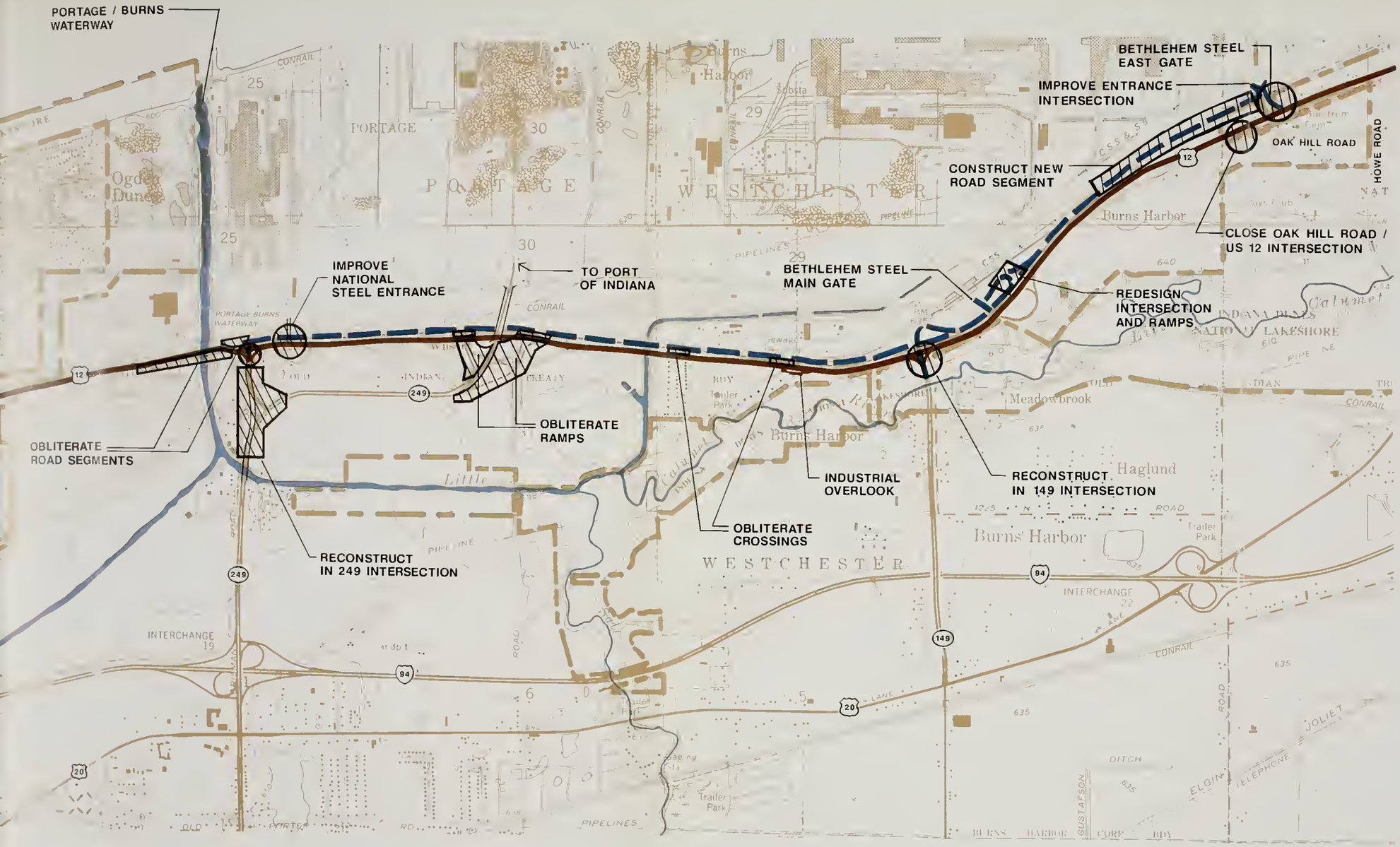
NEW STATE ROUTE

(DETAIL)
ALTERNATIVE 2

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40,104B



(DETAIL)

ALTERNATIVE 2

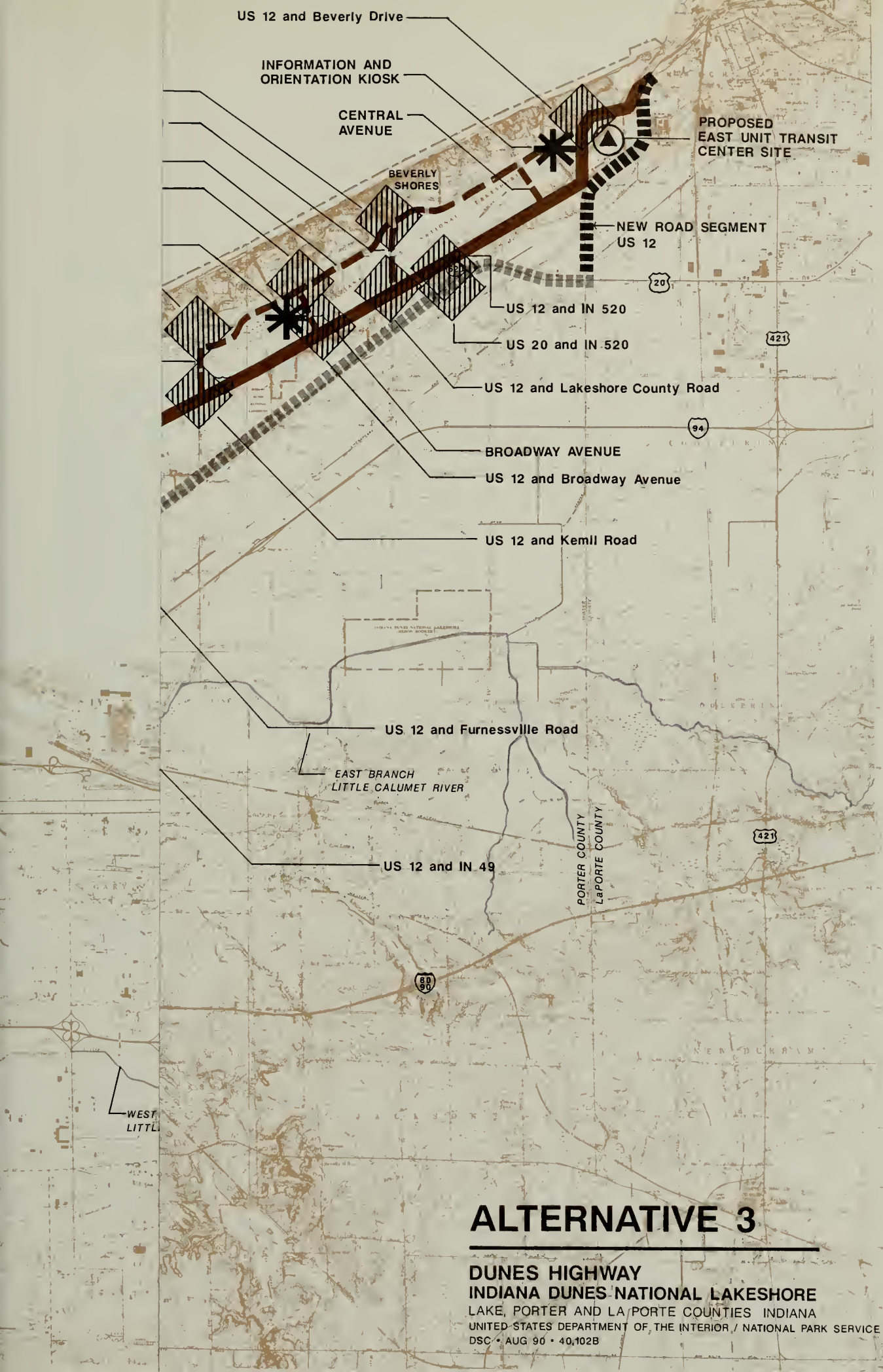
DUNES HIGHWAY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 626 • 40,1048



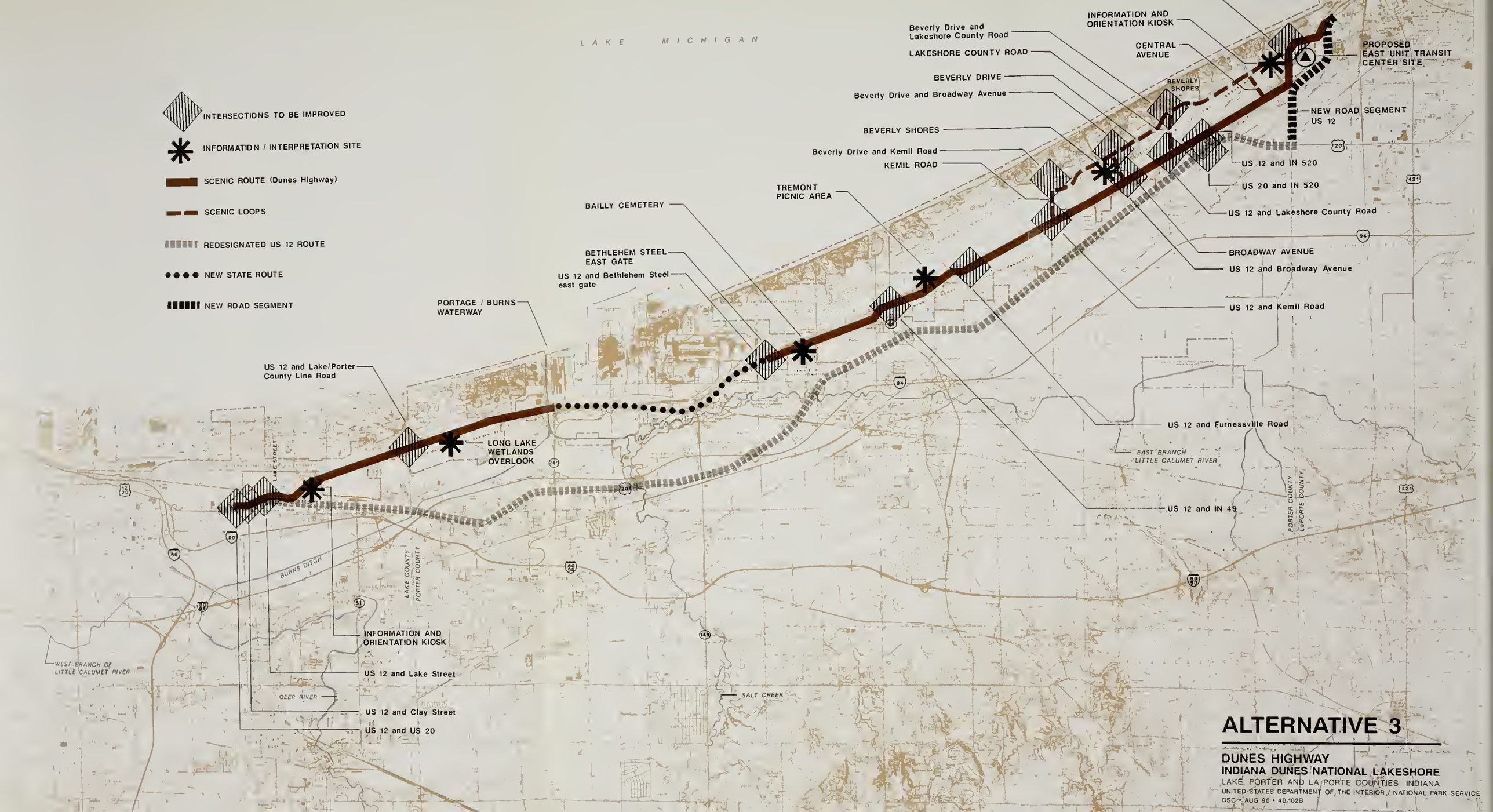
ALTERNATIVE 3

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 40,102B



ALTERNATIVE 3

DUNES HIGHWAY
INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 40,102B

to have a leisurely drive without the pressure of high speed traffic and huge trucks. Visitors would have the opportunity to observe and enjoy the views at a pace that would also allow them to understand what they are seeing and the interrelationships of the diverse scenery.

Information and Scenic Road Pulloffs

For scenic road alignment alternatives 2 and 3, there would be information kiosks on both the east and west ends of the corridor. Alternative 1 would have an information kiosk at the east end only (see table 1). Information would be provided about the national lakeshore – what there is to see and do and how to get there. These kiosks would also have information on where interpretive media is available.

East Information and Orientation Kiosk – This pulloff near the intersection of Beverly Drive and US 12 would provide a view of wooded dunes and some wetlands and would serve as the east entrance to the national lakeshore. Information, orientation, and interpretation would be provided in an unstaffed kiosk. Information would include a map and an orientation to the diverse opportunities for sight-seeing, recreation, and interpretation throughout the national lakeshore. Interpretation would focus on the dune and wetland communities – what is unique about them, what to look for, and how they relate to the national lakeshore as a whole.

West Information and Orientation Kiosk – Serving as the west entrance to the national lakeshore, on the south side of US 12 east of Hobart Road, information, orientation, and interpretation would be provided in this unstaffed kiosk. Information panels would have a map and orientation to the diverse opportunities for sight-seeing, recreation, and interpretation available throughout the national lakeshore. An interpretive trail from the kiosk into the Tolleston Dunes would give visitors a first-hand opportunity to observe the dunes and their interrelationship with the surrounding community.

The following scenic road interpretive pulloffs are part of the scenic road alternatives (see table 1). The following discussion of each pulloff identifies the specific resources that would be interpreted at each site along with the overall transportation theme of the corridor.

Tremont Picnic Area – This existing facility abuts a wooded wetland. Interpretation would focus on the differences between the open and wooded wetlands. Because of its proximity to the Dune Park Chicago South Shore Commuter Railroad station, the story of railroad transportation would be introduced

Table 1: Scenic Road Pulloffs and Information Kiosks

	Alternative 1	Alternative 2	Alternative 3
East Information & Orientation Kiosk	X	X	X
West Information & Orientation Kiosk		X	X
Tremont Picnic Area	X	X	X
Bailly Cemetery	X	X	X
Industrial Overlook		X	
Long Lake Wetland		X	X

here. A trail connection to the Dune Park Railroad station would be provided.

Bailly Cemetery – The Bailly Cemetery pulloff, on the south side of US 12 west of Mineral Springs Road, would offer trailhead parking for the Bailly/Chellberg trail. The historic cemetery sits atop the wooded Glenwood dune formation, and from the cemetery there are partial views north toward Lake Michigan and the steel mills and east across wetlands. The rail and highway network is also partially visible. There would be a trailhead sign to provide information about the trail.

Industrial Overlook – This site would be on the south side of US 12, west of Shadyside Road and opposite the Bethlehem Steel industrial complex. The view from this point is a panorama of the steel mill complex. Interpretation would focus on the growth of industry in the area, why the steel industry was attracted to this area, the steel production process, and the effect of that industry on the natural resources and the economy of the region.

Long Lake Wetland – This site would be south of US 12 and east of the Lake/Porter County Line Road in an area of low dunes. The view includes Long Lake and its wetland, the dunes at West Beach, railroad and highway corridors, distant residential and industrial development on the north, and Inland Marsh to the south. Interpretation would focus on the wetland ecosystems, dunes, and an overview of the area's development, including trade, transportation, and industry.

Interpretation

The primary story of any route designated as the Dunes Highway would be its evolution from animal trail to a major transportation corridor. Through the years, humans followed animal trails around Lake Michigan. Today, highways, railroads, and telephone lines form parallel paths that closely approximate the original routes. The following themes, identified in the national lakeshore's *Statement for Interpretation* (NPS 1989), would be interpreted where appropriate regardless of the road segments selected for scenic road designation:

> The rich diversity of ecosystems within the lakeshore provide outstanding opportunities for studying plant and animal life.
>
> Settlement and use by different cultures continue to influence how the area and its resources are used.
>
> Ecological succession is a dynamic process that is a major factor in creating the dune landscape.
>
> Geologic events, particularly glaciation, laid the foundation for the dunes and the entire Great Lakes.

Interpretation would concentrate on topics that can be observed from the scenic road. Other important aspects of the interpretive story that are not observable from the road would be introduced with information about where in the national lakeshore to go to learn more. Appropriate media for interpretation could include a publication, an audio cassette that could be purchased or checked out, and wayside exhibits.

OPTIONS FOR MANAGEMENT OF THE DUNES HIGHWAY

Designation of any of the alternatives as the Dunes Highway scenic road would still leave one important consideration - that of managing the scenic highway. Several approaches to management of the highway were considered.

Implementation of any management option would require modifying the boundary to include all proposed scenic road segments. Currently, 52 percent of the US 12 right-of-way and 50 percent of the potential scenic corridor[4] (between the intersection of US 12 and US 20 and the eastern national lakeshore boundary) is within the national lakeshore boundary.

OPTION 1: SCENIC HIGHWAY DESIGNATION WITH NPS OWNERSHIP OF RIGHT-OF-WAY

Ownership of the scenic road right-of-way is one approach to management of a scenic road. There is no requirement that adjacent lands be owned by public agencies.

Under this option, the National Park Service would acquire ownership of the right-of-way and assume management responsibility for the Dunes Highway. The Park Service would be responsible for upgrading and maintaining the road surface and enforcing laws along the corridor.

The Park Service would work with adjacent communities to develop voluntary design standards that could be adopted by the communities along the Dunes Highway. The recommended design standards would address the design and appearance of new construction and the possible modification of existing development that could be seen from the scenic road. The voluntary design standards would apply to a corridor "overlay zone," which could be established and incorporated into local planning and zoning regulations. This overlay zone would essentially be the potential scenic corridor, and it would delineate areas where improperly designed or sited development along the corridor would impact the view. This overlay zone would not affect the existing zoning ordinances or use and density regulations (which would remain in effect unless changed by the appropriate authority), but it could affect the design and location of new structures as well as access, signs, parking, and landscaping. The primary design review consideration would be visibility of new structures from the road. Location of access roads and driveways would also be a safety concern. Specific elements to consider would be access to and from the scenic road, setbacks, screening, scale of new structures, signs, materials, and location on the site.

OPTION 2: NPS OWNERSHIP OF ENTIRE SCENIC CORRIDOR

Under this option, the Park Service would acquire all lands within the potential scenic corridor (see the following "Design Approach" section for a definition of potential scenic corridor). This approach would allow the Park Service to manage all lands that can currently be seen from US 12 or have the potential to be seen in the future. This management option would limit the length of the designated scenic road because there are portions of the US 12 corridor where the private lands could

---

4. See next "Design Approach – Visual Assessment" section for a definition of potential scenic corridor.

not be acquired by the Park Service, such as in the Burns Harbor industrial area and in the residential/commercial portions of the Town of Pines.

OPTION 3: NPS OWNERSHIP OF ENTIRE RIGHT-OF-WAY AND PORTIONS OF THE SCENIC CORRIDOR (A COMBINATION OF OPTIONS 1 AND 2)

With NPS management of the scenic highway and portions of the scenic corridor, the Park Service would first conduct an inventory of the nonfederal lands along the scenic corridor to identify parcels that are critical to maintaining the integrity of scenic views from the Dunes Highway. These lands would be acquired in fee or through the acquisition of scenic easements to ensure that an existing scenic view would not be adversely affected. Where existing structures and development are not compatible with the scenic corridor, efforts would be made to acquire and remove the structures.

In other areas, the Park Service would work with affected communities along the Dunes Highway to develop voluntary design standards and land use regulations, as described under option 1 above, that could be adopted to protect and maintain the scenic quality of the route.

For portions of the US 12 scenic corridor (if they were designated as part of the Dunes Highway), such as the Burns Harbor industrial area or through the Town of Pines, it would be practical for the Park Service to own only the US 12 right-of-way.

OPTION 4: INTERGOVERNMENTAL MANAGEMENT

Interagency and intergovernmental management is also possible for scenic road management. Such an option could be phased or implemented with a single action. Intergovernmental management of a scenic road would distribute expenses among the participating federal, state, county, and local agencies or could designate specific agencies to be responsible for specific scenic road management tasks. In this later example, the Indiana Department of Transportation could continue to be responsible for road maintenance, the National Park Service would be responsible for road patrol of certain scenic road segments and interpretation, and the local counties and towns would be responsible for maintaining the existing quality and character of the visual corridor through the adoption of design standards and land use regulations.

Implementation of this option would require a close working relationship of all participating agencies. This option has the advantage that it would be less costly to any single agency or government.

The National Park Service conducted an inventory to identify and describe the existing views, landscapes, and significant features along the road. This identification and description is called a visual assessment. The existing character of the US 12 corridor can be maintained as long as future decisions about land use, design, and siting of new structures are made with an understanding and recognition of the existing character of the corridor. The visual assessment, then, may be used as a tool to guide the location and appearance of future growth and development and to manage the corridor as a scenic road.

VISUAL ASSESSMENT

The following visual assessment describes and analyzes what is seen along the US 12 corridor - called the **existing scenic corridor** – and what could be seen from the road to the horizon if the buildings and vegetation that are currently obstacles are disregarded - called the **potential scenic corridor**.[5] It is important to consider the potential scenic corridor (also called the potential viewshed) because landscapes are rarely static. That junkyard, currently hidden by trees, could become visible if the trees were removed. Conversely, perhaps a small grove of trees is blocking a panoramic view of the lakeshore and dunes, and selective pruning and removal of individual trees would enhance the visitor's scenic view. With an understanding of the existing and potential scenic corridor, there is a base of information from which to make informed decisions about current and future management of the visual corridor and with which NPS managers and local officials can maintain the existing views and the character of the scenic area. In short, the visual assessment shows what kinds of views, scenery, and resources are important and intrinsic to the scenic corridor.

For the purposes of this visual assessment, two components have been developed – an inventory of existing views and an analysis of the landscape units. The view inventory and the landscape units, together, begin to describe the visual experience along US 12.

Inventory of Existing Views

A view is defined as a scene that is looked toward or kept in sight; it encompasses a limit of visual space.[6] The Inventory of Existing Views map shows the existing views from the US 12 roadway and includes their type, location, orientation, and relative scale. Viewing conditions along the roadway – blocked, interrupted, or clear – are also shown. The map also displays the diversity of scenic viewing opportunities along the US 12 route, from broad

---

5. The potential scenic corridor was first defined in the office using a US Geological Survey (USGS) topographic base map. Elevations of the roadway and surrounding terrain were compared to determine the apparent visible areas from US 12. This map was then taken to the site where a detailed view inventory was performed to verify conditions and refine the view inventory by the addition of details, structures, vegetation, and other elements that affect the views.

6. There are several definitions of view currently in use. The basic definition used in this study comes from the Forest Service *National Forest Landscape Management*, vol. 1, 1973. This definition was modified by J.O. Simond's definition of view in his book *Landscape Architecture*. The resulting definition is used in this study.

panoramas to short glimpses and narrow constricted views. The map is a symbolic representation of the view from the road, locating and describing areas of view blockage, enclosure, openness, linear views, and intermittent or interrupted views.

Having limits, a view therefore has dimensions - depth, width, and height. View depth is defined by the distance zones of foreground, middleground, and background. These distances describe levels of detail resolution, varying with the specific landscape being inventoried. The most detail (individual elements) is seen in the foreground, up to 1/4 to 1/2 mile away. Middleground reveals detail through masses of objects and spans from 1/4 mile to 3-5 miles. Background shows detail through indistinct tones and patterns and extends from 3 miles away to infinity. View width is described by terms like glimpse, slot, wide angle, and panorama, among others. Width is not a measurement but rather a description of the degree of view constriction.[7] The height of views is not described separately because it is in proportional relationship to the width and depth of the view.

There are four categories of views within the scenic corridor:

Expansive views radiate out from the highway in an ever-widening cone of vision. These are wide, long, uninterrupted views, spanning foreground, middleground, and background.

Constricted views narrow with distance. These views include the uninterrupted foreground and middleground, but close completely as they enter the background.

Filtered Views (glimpses) are views that are frequently interrupted in the foreground by low-density intrusions such as a single line of trees or a rail fence. The total view exposure time is so short between these interruptions that the perception of the scene by the viewer is limited to the middleground scenery.

Intermittent views are periodically interrupted in the foreground by vegetation or structures. They are broad or constricted.

Landscape Unit Analysis

The identification of "landscape units," derived from land use and landscape categories, provides a different way to analyze the visual aspects of the scenic corridor (see Landscape Units map). A landscape unit is an area of distinct visual character analogous to an "outdoor room" – a particular setting through which the road passes. Each landscape unit is a collection of visual components such as fences, buildings, utility poles, etc., that collectively describe what is seen in the outdoor room – just like people may be described by their height, weight, hair color, and eye color. The landscape units describe not only what exists in the scenic corridor, but also what could be seen in the potential scenic corridor (from the road to the horizon line if the buildings and vegetation that are currently obstacles are disregarded). As described above, landscapes are not always static (removing the trees could expose the junkyard), and some way of evaluating the potential scenic corridor is needed for effective management. The landscape units were identified by visual inspection of the corridor (each was found several times along the corridor).

---

7. The exception is the particular view type called a **vista**, or directed view. Vistas may be natural or man-made but they always have a viewing station and a specific focal point separated by middle ground (Simonds 1961).

INVENTORY OF EXISTING VIEWS

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LaPORTE COUNTIES · INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC · FEB 90 · 626 · 40,103A

LAKE MICHIGAN
SCENIC VIEWS:
EXPANSIVE VIEW
CONSTRICTED VIEW
FILTERED VIEW (Glimpse)
INTERMITTENT VIEW
VIEWING CONDITIONS:
BLOCKED
INTERMITTENTLY BLOCKED
BURNS DITCH
LAKE COUNTY
PORTER COUNTY
EAST BRANCH
LITTLE CALUMET RIVER
PORTER COUNTY
LaPORTE COUNTY
WEST BRANCH OF
LITTLE CALUMET RIVER
DEEP RIVER
SALT CREEK
INVENTORY OF
EXISTING VIEWS
US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LaPORTE COUNTIES · INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC · FEB 90 · 626 - 48,103A

WATER / STREAM

URBAN

RESIDENTIAL

NATURAL OPEN

NATURAL CLOSED

ROADSIDE COMMERCIAL / VILLAGE

INDUSTRIAL

N

0 1 2 MILES

0 1 2 KILOMETERS

LANDSCAPE UNITS WITHIN POTENTIAL SCENIC CORRIDOR

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 626 • 40111

LANDSCAPE UNITS WITHIN POTENTIAL SCENIC CORRIDOR

US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40111

The following table shows the acreages for each of the landscape units. Representative sketches of each type follow. Sketches of the same landscape unit with possible design modifications (which are described in the following "Design Modification" section of this document) are also included to illustrate potential corridor visual improvements. No modified industrial landscape unit sketch is included because of the relatively minor modifications of removing billboards and parked railroad cars.

TABLE 2: LANDSCAPE UNIT ACREAGE WITHIN THE POTENTIAL SCENIC CORRIDOR

Landscape Unit	Acres
Urban	339
Rural residential	1,210
Natural open	6,788
Natural enclosed	7,669
Roadside commercial and village	356
Industrial	2,269
Total	18,631

Urban - high-density, intense development, multistory buildings, commercial developments, residential housing, numerous signs and billboards, street lighting, numerous streets and intersections, traffic signals and congestion, pavement, parking, utility poles, commuter/freight railroads.

Urban landscape unit with design modifications.

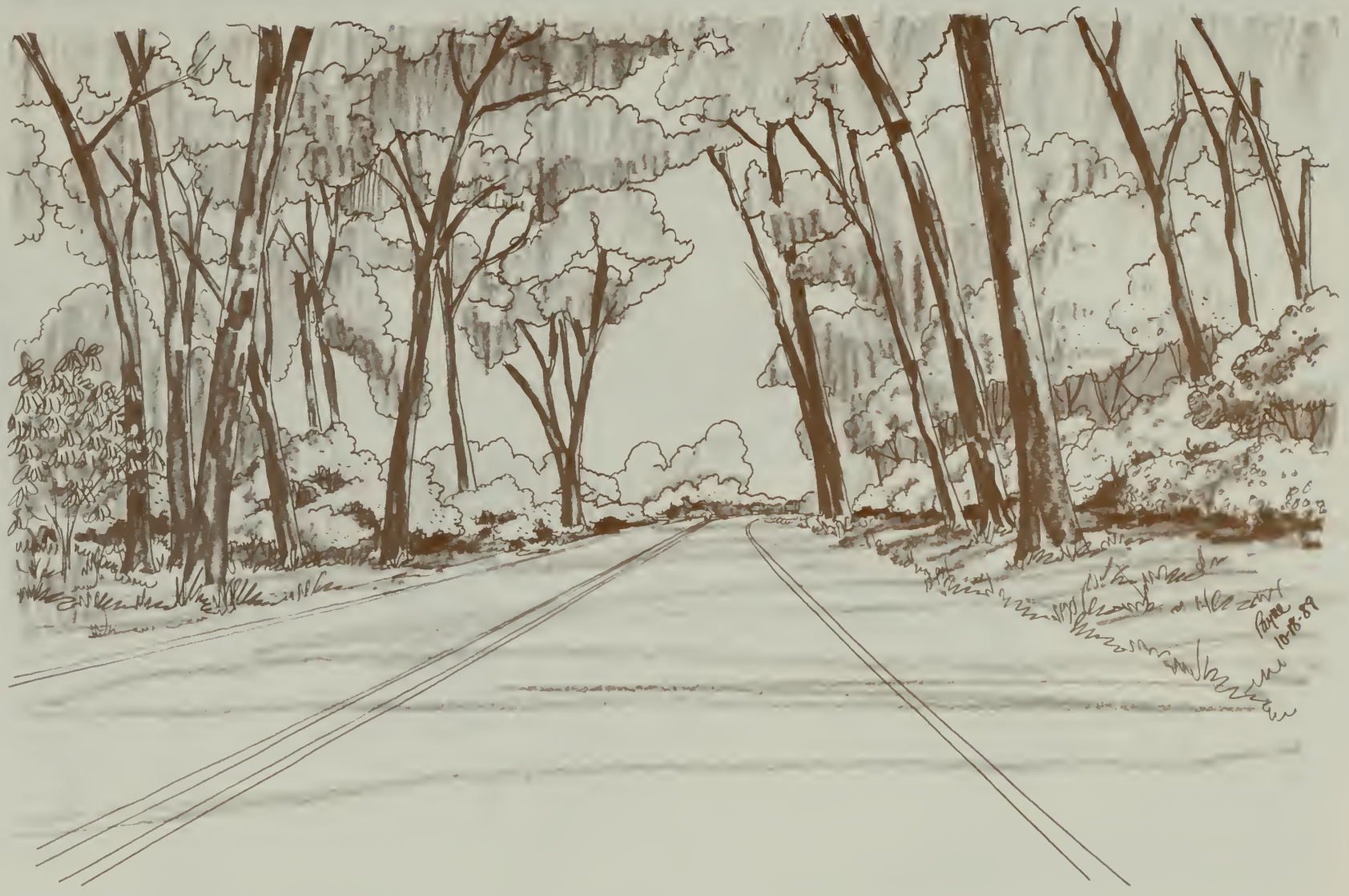
Rural Residential - areas of large lots and low-density housing development, which often occur in areas of agricultural use (hayfields or pasture). Structures occur alone or in clusters. There are barns, garages, and storage outbuildings associated with houses. Views are open to medium-length with natural terrain and shrubs and trees as backdrops.

Rural residential landscape unit with design modifications.

Natural Open - areas of broad, open views with only sparse man-made development. The natural features are wetlands, lakes, dunes, successional vegetation (grasslands, shrubs), and open water bodies. Man-made intrusions include railroads, roads, power lines, and occasional houses.

Natural open landscape unit with design modifications.

Natural Enclosed - areas that are confined or constricted in their visual scale by topography, vegetation, and dunes so that the views are short and most of the seen environment is in the foreground. The degree of enclosure may vary from full side and overhead enclosure by trees to visual plant walls along each side. Man-made intrusions such as roads, some signs, power lines, and occasional houses occur in these areas.



Natural enclosed landscape unit with design modifications.

Roadside Commercial - isolated areas of retail or commercial businesses, outside of urban or residential settings. They are composed of small commercial buildings that may be detached or joined in strip developments, with signs, lights, parking, short road setbacks, and multiple curb cuts.

Roadside commercial landscape unit with design modifications.

Village - nodal areas of mixed residential and commercial/retail land use. They have short to medium setbacks, street lights and signs, power lines, and many curb cuts, and generally short views constricted by structures and trees.

Village landscape unit with design modifications.

Industrial - generally flat, open areas composed of large structures, smokestacks, open storage areas with large equipment, railroads, parking lots, power lines, and roads.

DESIGN MODIFICATIONS

Several design modifications would be required under any of the three action alternatives for the development of the Dunes Highway scenic road. However, it is recommended that safety modifications be implemented even if a scenic road is not designated. These modifications would all be accomplished within established NPS road standards, which deal with the roadway classification, design speed, traffic volume, and physical construction. These standards are described in National Park Service *Park Road Standards* (1984a). The modifications foreseen are primarily for the purposes of increasing visitor safety, enhancing the aesthetic quality of the drive, and improving the visitor experience.

Modifications to the scenic roadway would continue the consistent design theme that has already been established at the national lakeshore. This has been done through materials selection, construction/assembly methods, and visually compatible design of individual elements in the landscape. All landscape furnishings (bollards, fences, retaining walls, benches, signs, lights and light standards, kiosks, walks, trails, paths) relate to each other and appear as part of the same overall network. Controlling principles of design include scale, placement, repetition, and clarity, and the key to their successful use is consistency. This consistency provides instant recognition of the national lakeshore.

The following objectives should be used to guide future design modifications should an NPS-managed scenic road be established.

Enhance visitor safety through the removal or modification of unsafe intersections, unnecessary road or driveway access, and visual obstructions along the corridor. Other steps would include better roadway definition (through striping, landscaping, or maintenance practices), drainage improvements, traffic and information signs and signals, turn lanes, acceleration and deceleration lanes, and intersection design.

Remove or **mitigate negative visual elements** along the corridor such as billboards, utility poles, and parking adjacent to the scenic road corridor.

Create a thematic, unifying element throughout the corridor and national lakeshore. This could be accomplished through consistency of materials and design for guardrails, fences, and signs and through maintenance practices (consistently mowed and maintained shoulders, striping of roads, and maintenance of the road surface).

Retain the existing character of the corridor and its landscape units, including both natural and cultural features, such as residential structures and existing communities as well as industries.

Enhance recreational uses of the US 12 corridor through interpretive pulloffs, hike/bike trail connections, and selective shrub and tree pruning and selective removal of individual shrubs or trees.

SAFETY

Safety modifications would correct several problems that currently exist along US 12.

Intersection Modifications

Intersections are the principal traffic safety concern on any roadway. The traffic and transportation engineering

consultant for the Park Service prepared an analysis of 38 signalized and selected nonsignalized intersections along the alternative scenic highway routes as well as redirected traffic routes.

Existing geometry, traffic turning movements, and accident history were analyzed for each of the intersections. The current and projected level of service for each of the intersections was also evaluated. Recommended modifications to safely accommodate existing and projected traffic were made for each intersection. Safety improvements include signals, turn lanes, widening approaches, improved traffic channelization, and redesign of ramps. For a full description and evaluation of each intersection, as well as recommended design modifications, see the *Transportation Study Final Report* by Traffic Engineers, Inc. (1989).

Access Limitation (Intersection Closures)

"Benefits to road users due to accident reduction resulting from control of access are clear and unmistakable" (American Association of State Highway Officials 1972). To improve safety along the Dunes Highway, access roads and driveways would be periodically reviewed for closure. Factors to be considered when recommending road or driveway closure are extreme or awkward intersecting street angles, short sight distances, availability of alternate routes, accident history, daily traffic volume, number of residences, and proximity of other intersections and driveways.

A review of existing low volume or hazardous intersections was conducted by the NPS traffic and transportation engineering consultant. This review identified the following four intersections that should be closed based on the above criteria: Oak Hill Road, Furnessville Road, Quigley Avenue, and Oxford Avenue. As reservations of use expire (residences that the National Park Service has purchased and the homeowner has selected to remain for a fixed period of time), driveways will be obliterated. Other intersecting streets could be recommended for closure as traffic, travel, and accident patterns warrant.

Sight Distance

Safe, efficient roadways depend on the driver's ability to see what is ahead while moving along the highway. Sight distance is the length of roadway on which another vehicle or obstruction is continuously visible to the driver. The minimum sight distance on any stretch of road should be sufficient to allow a vehicle traveling at the design speed to stop before reaching an object in its path. Adequate sight distance is critical at potential traffic conflict areas such as intersections. (See NPS *Park Road Standards* for intersection sight distances for various design speeds.)

One approach to providing adequate sight distance is to remove obstructions. This may create conflicts between natural, cultural, and scenic resources (such as trees, shrubs, and wetlands) and the desirable margin of roadway safety. Other methods to achieve adequate sight distance include reduction of the speed limit and the installation of warning signs or traffic signals. To protect the scenic resources of the Dunes Highway, sight distance problems should be reviewed on a case-by-case basis to determine the best approach to resolving the safety hazard.

Road Shoulders

Except for the four-lane industrial section, existing roads at Indiana Dunes are two-lane paved asphalt, with no paved or distinct shoulders. The roads have open ditches along both sides. The average daily traffic (ADT) volume on the two-lane rural road segments is

between 4,000 and 8,000 vehicles. The NPS standard minimum shoulder width is 4 feet for these roads, which is consistent with the character of the existing road network at Indiana Dunes National Lakeshore. (Road shoulder width standards are described in NPS *Park Road Standards* for the various traffic volume levels of roads.) Roadway widening, which would be required in some segments of the corridor, would intrude into the natural roadside vegetation and, in some cases, wetlands. In these areas, road shoulders should be maintained at the minimum width to reduce impacts to vegetation and wetlands. Generally, 4-foot-wide turf shoulders are envisioned throughout the scenic road. The shoulders would be mowed consistently throughout the corridor, but the adjacent areas would be maintained in their natural condition.

AESTHETIC QUALITY/DESIGN

Several design modifications are recommended for the enhancement of US 12 and improving the visitor experience.

Signs

Informational and directional signs would be developed and would use materials native to the area. The signs would be clear, readable, unique, and compatible with other site furnishings throughout the national lakeshore.

Maintenance

Maintenance methods along the road would be standardized to provide visual recognition of the scenic route. These maintenance standards would include using standardized roadway construction materials, mowing shoulders to particular standards and distances, and uniform pavement striping.

Removal of Visual Intrusions

Wherever possible, billboards, utility poles, parking adjacent to the roadway, and equipment/storage yards would be removed, relocated, or screened from view. Such modifications include eliminating utility poles along US 12 that carry only telephone wires. It is the policy of the telephone company to bury telephone cables whenever possible. In some portions of the US 12 right-of-way there may be separate utility poles carrying electricity, telephone, and the Chicago and South Shore Railroad power supply.

Existing visual intrusions such as utility poles that carry electricity may not be removable because of the high cost involved and because any electric utility modifications must be integrated into the regional electric utility grid. Burying electric wires is somewhat more involved than burying telephone lines.

Another example of modifying a visual intrusion would be to redesign the Ogden Dunes commuter railroad parking at the intersection of Hillcrest Road and US 12. In addition to being a visual intrusion, this parking area is a safety hazard; cars park close to US 12 without adequate sight distances relative to the speed of vehicles on US 12. This parking lot should be redesigned so that it is partially screened from US 12 and so that distinct access points to US 12 are provided rather than allowing access along the entire length of the parking lot.

Standard Design Approach

Consistent design can be used to make visitors comfortable with the surroundings and to allow immediate recognition of being within the national lakeshore. A design "theme" has already been established at the national lakeshore; it sets standards for design, scale, size, materials finishes, and placement of site furnishings (including light standards, guardrails, fences,

retaining walls, signs, roadway pavement, bollards, footbridges, and biking and hiking paths). This same design theme would also guide the design of the scenic road and associated modifications, pulloffs, site furnishings, and structures. Generally, roads in the national lakeshore should be designed without curbs, gutters, or extensive storm drainage systems.

Enhance Recreational Uses

To enhance recreational use, Park Service management of the scenic highway would include the provision of interpretive pulloffs, connections to recreation facilities, and selective view enhancement. Interpretive pulloffs, discussed in the "Scenic Road Alternatives" section of this document would be provided along the scenic highway to enhance the traveler's understanding of the natural and cultural resources along the highway corridor. The US 12 corridor would connect national lakeshore, state, and private recreation facilities, including beaches, hiking/biking trails, and visitor centers. View enhancement, through selective shrub and tree pruning and removal, would expose important views along the scenic highway, enhance the character of the area, and supplement interpretive stories.

DESIGN CONCEPTS

One of the goals of the scenic road is to improve view quality without sacrificing the visual character that defines the units. The aforementioned design modifications and design objectives have been illustrated in the "after" sketches, which are included in the previous "Design Approach" section.

No modifications are shown in the industrial unit sketch because it contains no elements inconsistent with its character. However, even here obstructions such as billboards and parked railroad cars should be removed so the view can be seen. The natural enclosed unit was modified by thinning the roadside vegetation, but not to the extent that the feeling of enclosure was lost. In the urban unit, landscaping and planted medians were used to mute the effect of commercial development while retaining the unit's character.

Several changes are shown to enhance visitor safety. In six of the seven units, intersections and traffic circulation were clarified and traffic types separated. Sidewalks, bike lanes, turn lanes, crosswalks, and traffic signals were provided as necessary and applicable. These changes removed points of conflict or confusion, improving safe traffic flow. No safety modifications were made to the industrial unit sketch because of the four-lane divided highway already there.

Negative visual elements are modified or removed in the "after" sketches to illustrate the appearance of a possible future Dunes Highway. These negative elements include utility poles, overhead wires, signs, billboards, and some traffic signals. In the urban and commercial units, commuter parking lots were separated and screened from the roadway by landscaped medians. Vegetation in the natural enclosed units was thinned to permit foreground views into the wooded roadside landscape. In all units (except industrial) the roadway and shoulders were defined by maintained pavement, shoulders, and pavement markings. Landscape components having historic significance or contributing strongly to unit character, such as on the Chicago and South Shore Railroad utility poles, were retained intact.

Consistency was used in all modifications such as maintenance methods, signs, roadway design, striping, and shoulder construction. Bike routes were added to the roadway in the rural residential, natural enclosed, and village units. Curbs and gutters were added to rural residential and roadside commercial

landscape units where stormwater drainage is a problem. Sidewalks were shown in the village units, and landscaped medians and planters were added in the urban and roadside commercial units. Using established designs for individual landscape elements provides continuity throughout the scenic road.

DESCRIPTION OF THE STUDY AREA

The following discussion includes a general description of the national lakeshore and the cultural and natural resources and socioeconomic factors within the study area[8].

CULTURAL RESOURCES

Archeological Resources

Archeological artifacts recovered from the Porter County area are typical of cultures from the Paleo-Indian period (12,000 to 9,000 years before the present). Prehistoric sites that date to the Middle Woodland period (200 B.C. to A.D. 500) have been found within national lakeshore boundaries.

The prehistoric record of the native American occupancy of the southern shores of Lake Michigan is poorly known. An account written in 1679 reported a village of Miami, Mascouten, and Wea Indians living near the portage of the St. Joseph and Kankakee rivers, less than 50 miles from the national lakeshore. Jesuit priest Claude Jean Allouez reported Potawatomi groups on the western shores of Lake Michigan in 1667. He indicated that they subsisted by hunting, fishing, and cultivating maize. They used their surplus maize for trade. Evidently, the Potawatomi began to migrate southward during the last part of the 17th century. By the late 18th century they inhabited the entire region surrounding the southern end of Lake Michigan.

To date, only limited archeological studies have been conducted at Indiana Dunes National Lakeshore, including a field appraisal by Honerkamp (1968), a small dig at Bailly Homestead by Limp (1974), a study at Bailly by Munson (1976), and an assessment at West Beach by Johnson (1974). During a reconnaissance level survey of the national lakeshore, except Miller Woods and the lands added as part of Public Law 96-612 (1980), 13 archeological sites were recorded. The most recent archeological survey in the national lakeshore, in which 15 additional sites were found, was conducted in 1989 for the East Unit campground site. The East Unit Transit Center site was surveyed in 1984 by the Department of Anthropology, Northwestern University. None of these sites has been evaluated through subsequent testing. The discovery of 28 sites demonstrates that significant archeological resources are present within the national lakeshore and are currently obscured by sand and/or dense vegetation.

---

8. As described previously, the study area includes the 25-mile long US 12 corridor from the intersection of US 20 and US 12 in Gary on the west to Franklin Street in Michigan City on the east. The study area also includes Beverly Drive, Kemil Road, and Broadway Avenue (in the town of Beverly Shores, and Central Avenue and Lakeshore county road in the Town of Pines). These routes add an additional 7 miles of roadway to the corridor under study. The potential scenic corridor (seen area or viewshed) from US 12 to the north and south of the existing US 12 right-of-way is also part of the study area. (See "Design Approach - Visual Assessment" section for a definition of potential scenic corridor.)

The study area also includes US 20 (the primary parallel route to US 12) as well as the north-south routes that connect US 12 and US 20 because they are possible alternate routes for through traffic and trucks that use US 12. The adjacent and connecting routes also directly relate to traffic safety at intersections with US 12 as well as being potential alternate routes for industrial-area-related traffic. The major US 12/US 20 connecting routes are Indiana state highways 51, 49, 149, 249, and 520, and Lake/Porter and Porter/LaPorte county line roads.

Historic Resources

The only National Register of Historic Places property immediately adjacent to US 12 is the Beverly Shores Railroad station. This structure, which the National Park Service does not own or operate but which is close to US 12, at least offers an opportunity for developing one of the prominent themes of the national lakeshore – transportation.

US 12 is directly associated with the prehistoric and historic travel routes through the area. As it passes near the Bailly Homestead, the roadbed closely coincides with one of the prehistoric trails used by native Americans – called the Calumet Beach trail by the first European travelers. The Calumet Beach trail was only one of a network of natural trails made by game animals. With the advent of settlers and emigrants in the 19th century, new trails followed and enhanced the old, culminating in the railway corridors of more recent times. With all of the industrial development in the Calumet region, remnants of the original trails can now only be found through archeological surveys.

One more layer of concealment was added to the old trails in the 1920s – the time of the burgeoning automobile travel era. Even though the horseless carriage had been on the scene for more than a decade, its continued presence was not ensured until good roads were developed and constructed. In 1923, US 12 was given a concrete surface and christened late in the year as the "Dunes Hi-Way." The Dunes Highway Association commemorated the event by placing a plaque in the southwest quadrant of the IN 49 and US 12 intersection.

The Chicago, South Shore and South Bend Railroad is considered to be the last continuously operating interurban electric rail line in the nation, having begun service in 1908. Its tracks parallel some of the earliest trails in the region and pass through or are adjacent to the national lakeshore for approximately 13.5 miles. The fleet of 49 passenger cars, most of which were over 50 years old, was replaced with modern cars in 1980-1984. Eighteen of these original cars were acquired by the Park Service. One has been restored and two more have been stabilized and preserved. Because the rail and road corridors traversing the national lakeshore so closely coincide, there is an opportunity for exhibiting one or several of these historic cars on a siding adjacent to US 12 – an outstanding way to develop the transportation theme in conjunction with US 12. The South Shore Railroad itself is outside the management control of the national lakeshore.

A determination of eligibility for listing on the national register was sought for the entire rail line, but the application was rejected because of its complexity. However, the Beverly Shores Railroad station was selected for the national register as representative of the entire line. The *General Management Plan* (NPS 1980) nevertheless recognized the South Shore Railroad as a historic resource and identified it as a method of transportation to the national lakeshore. The South Shore Railroad, with stops at the lakeshore transit centers, was also addressed in the 1983 NPS *Transportation Study* as a means of public transportation to the national lakeshore.

Although the 1933 World's Fair houses (now NPS owned) are not adjacent to US 12, the national lakeshore's *Resource Management Plan* (NPS 1987b) provides for their eventual removal from the beachfront to a safer place – which could mean adjacent to or near the highway. Because these six structures are listed on the National Register of Historic Places, there is a responsibility to preserve their integrity and relocate them to land that has previously been surveyed for archeological resources.

NATURAL RESOURCES

Geology

Indiana Dunes National Lakeshore has diverse geologic features and terrain. The combination of glaciers, wind, and water has created moraine (glacial till and outwash materials) topography, freshwater lakes, sand beaches, dunes, wetlands, and bogs. Thick glacial drift deposits from the Wisconsonian Age mantle the entire area and consist of till, clay, silt, sand, gravel, muck, and peat. The underlying well-consolidated bedrock layer consists of limestone, dolomite, sandstone, and shale.

The Indiana Dunes resulted from the retreat of the last great glacier some 11,000 years ago (NPS 1980). This glacial retreat resulted in seven major Lake Michigan shoreline level stages. The current beach ridge is the youngest and extends inland to the oldest. This is the most completely preserved Great Lakes geological sequence in the entire Great Lake Basin (NPS 1988a). The Tolleston stage is best represented in the national lakeshore at the Inland Marsh area. The crest of the Calumet dune line follows US 12 in the eastern part of Indiana Dunes National Lakeshore.

Topography/Soils

Most of the national lakeshore lies within the Calumet lacustrine plain. South of the present shoreline lie the Tolleston, Calumet, and Glenwood stages of shoreline. The ancient dunes and wetlands associated with the Tolleston and Calumet shorelines account for many of the topographic features along the southern boundary of the national lakeshore.

The soils are a direct result of the geologic history of the area. Clay-rich soils occur in the southern portion of the national lakeshore, underlain by glacial moraine and lake deposits. Soil surveys for Lake and Porter counties, which includes the study area, have been completed and published by the U.S. Department of Agriculture, Soil Conservation Service (1972, 1981).

Vegetation

Indiana Dunes National Lakeshore offers prime examples of plant succession, containing more than 1,130 different species of flowering plants and ferns with representative examples of the eastern deciduous forest, boreal forest, Atlantic Coastal Plain, and prairie species. The vegetation is one of its most significant features and represents a major reason for establishment of the national lakeshore (NPS 1987b).

A 1989 revision of the national lakeshore's vegetation (plant community) classification system coupled with geographic information system (GIS) mapping has resulted in a comprehensive vegetation data base. The previous Land Use/Land Cover map identifies the vegetation types occurring in the study area and general vicinity. Following is a brief description of the general plant communities/succession that have developed at Indiana Dunes National Lakeshore and that can be generalized for the study area.

Upland Forest – Forests growing on well-drained areas that are rarely, if ever, flooded or covered with standing water. These forests are found on dunes or the uplands of the glacial moraine. The tree, shrub, and herb species found in these forests are often completely different than those found in lowland forests.

Lowland Forest – Forests growing in areas that are periodically flooded, such as river and stream floodplains and drainage valleys, or in areas where standing water is present year-round. Lowland forests often border marshes, ponds, and shallow lakes

and may cover extensive areas between two series of dune ridges. Low swales between forested dunes are usually wet and contain lowland forest.

Terrestrial Shrub – Terrestrial shrub thickets usually have formed as a result of clearing forests or abandoning farmland (on the moraine) or suppressing fires (in the dunes). Shrub thickets on the moraine could be considered an intermediate stage between an old field and a young forest. On the dunes they are intermediate between open oak savannas and closed oak forests.

Prairie – A prairie is a grass and herb dominated community with a much higher diversity of plants than a foredune community. Prairies are found in areas that have never been disturbed by sand mining and that show no evidence of having recently been an active dune or blowout. They are generally older and more well developed than foredune communities. True prairies at the Indiana dunes are found only in the dunes and are composed of native species rather than Eurasian weeds or old field species. Prairie flora makes up the herb component of the savannas.

Shrub – Wetland shrub thickets grow in areas that have standing water or wet soils year-round. They usually contain different shrub species than a terrestrial shrubland. Wetland shrub thickets often occur as clumps or islands of shrubs scattered in the middle of marshes or along their edges. If shrub cover is less than 50 percent, the area is considered marsh. Around the Indiana Dunes, many drained marshes are now becoming wetland shrub thickets as shrubs and young trees invade.

Marsh – Herb-dominated wetlands almost always contain abundant stands of cattails or giant reed grass and sedges. Marshes are most extensive in the low-lying wetlands between two series of dune ridges, although small pockets of marsh may occur in the swales between two dunes, along river floodplains, or around pond edges.

Wildlife and Fish

Wildlife within Indiana Dunes National Lakeshore are diverse due to the variety of habitats. Birdlife is extremely varied, with more than 300 species observed. The most common inland birds are blue jay, robin, red-eyed vireo, mourning dove, downy woodpecker, flicker, grackle, and song sparrow. Proximity to the shoreline makes the national lakeshore an important feeding and resting area for migrating land and water birds. Wetland bird species include red-winged blackbird and long-billed marsh wren.

Common terrestrial animals include white-tailed deer, woodchuck, raccoon, cottontail rabbit, fox, red squirrel, chipmunk, meadow vole, and white-footed mouse. Common reptiles and amphibians include garter snake, hognose snake, Fowler's toad, and red-backed salamander.

The Little Calumet River is the major stream in the corridor area. All major game fishes within the Little Calumet River are exotics. Important fishery species include steelhead (rainbow trout), brown trout, coho salmon, and chinook salmon. The Indiana Department of Natural Resources (IDNR) annually stocks yearling juvenile salmon and steelhead trout in the spring at the IN 149 bridge near US 12. The brown trout are a self-sustaining, naturally reproducing population located primarily in the east branch river segment by the Porter/ LaPorte county line (NPS 1986). Nongame fishes consist of buffalo, white sucker, carp, creek chub, johnny darter, blunt-nose minnow, and green sunfish.

Threatened and Endangered Species

Several federally listed threatened and candidate plant species occur in the study area, including the threatened sand thistle (*Cirsium pitcheri*) and two category 2 (C2) species, the forking aster (*Aster furcatus*) and the prairie fame-flower (*Talinum rugospermum*). (A category 2 or candidate species is one that is under consideration for federal listing.)

The federally listed threatened sand thistle is scattered within Miller Woods and abundant in the West Beach area. The category 2 forking aster is considered rare within the Tolleston Dunes area. The category 2 prairie fame-flower is considered rare in the Miller Woods and the Dune Acres areas.

A list of the state-listed threatened and endangered plant species occurring in the study area is presented in appendix I. State-listed threatened, endangered, or rare plant species **are not** protected by state statutes.

Several federally listed category 2 animal species are known to occur or potentially occur within the study area. Federally protected animal species include three category 2 species: eastern massasauga snake (*Sistrurus catenatus catenatus*), Kirtland snake (*Clonophis kirklandii*), and Karner blue butterfly (*Lycaeides mellissa samuelis*) – see appendix I.

Various animal species protected by the State of Indiana and state-listed as threatened and endangered are within the study area (see appendix I). All vertebrate and invertebrate animal species **are** protected by state statutes (IC14-2-3-3, IC14-3-2-3, and IC14-3-3-7) and under state administrative codes (310IAC3-3-6) and enforced by the IDNR, Fish and Wildlife Division.

Water Resources/Water Quality

The major surface water resources adjacent to the study area include the Portage/Burns Waterway and the Little Calumet River and its tributaries. Other scattered water resources consist primarily of Long Lake wetland, interdunal ponds, and scattered wetlands. Many of the drainage patterns in and surrounding the lakeshore have been significantly altered by channelization, filling of wetlands, ditching, dikes, and dewatering during agricultural and industrial development of the area. A water resources baseline inventory and assessment (Dolak 1986) has been completed for the national lakeshore.

The national lakeshore overlies an extensive groundwater reservoir. The general groundwater gradient is towards Lake Michigan. Groundwater gradients are very localized in the lakeshore and surrounding areas. The groundwater table generally varies from 0 to 45 feet below the surface (NPS 1979).

The Little Calumet River is the principal river flowing through the lakeshore. The *Statement For Management* (NPS 1988a) identifies the Little Calumet River as a significant resource within the national lakeshore. The river contains 83 miles of tributary streams including Salt Creek, Coffee Creek, Sand Creek, Reynolds Creek, and several drainage ditches (NPS 1986). The Little Calumet River has two branches – the east branch flows 42.1 miles through LaPorte and Porter counties and empties into the Portage/Burns Waterway in Portage, Indiana, and the west branch that begins in Illinois and travels east through Lake County. Deep River and the west branch of the Little Calumet River join just east of I-65 to form the Burns Ditch that continues east to the Portage/Burns Waterway.

With neighboring industrial, agricultural, and residential activities present, major water pollution concerns include bacterial

contamination of swim beaches, road salt contamination, parking lot and highway runoff, industrial landfill contamination (especially in Miller Woods), sewage and industrial effluent from treatment ponds, and agricultural runoff. Many of the pollution sources are outside NPS jurisdiction.

Baseline water quality and water chemistry characteristics have been established for some areas within the national lakeshore. The national lakeshore is currently conducting a long-term periodic water quality monitoring program. Past research and studies indicate high levels of PCBs and nitrates in some surface and groundwaters within the national lakeshore. USGS has found high levels of heavy metals and some elevated arsenic and boron levels.

Floodplains and Wetlands

There are few floodplains within Indiana Dunes National Lakeshore, except for along the Little Calumet River, due to the lack of surface drainages, streams, and waterways in the area. The 100-year flood levels for the national lakeshore (based on county flood insurance rate maps and flood insurance studies) are identified on the Floodplains and Wetlands map.

Wetlands within the study area include ponds, marshes, swamps, and peatlands. Prime examples of wetlands are Long Lake Wetland, Inland Marsh, Indiana Dunes State Park, and the wetlands along Kemil Road and Beverly Shore Drive. Variations in water levels seasonally and annually may result in wetlands changing from one wetland form to another. Designation of wetlands in the lakeshore area, based on the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory maps, are identified on the Floodplains and Wetlands map. Major wetland systems delineated for the national lakeshore are palustrine, riverine, and lacustrine.

Air Quality

Air quality in the vicinity of the Indiana Dunes National Lakeshore is affected to a major extent by the urban influences of the Chicago metropolitan area, and somewhat more directly by the adjacent urban and industrial development in and around the cities of East Chicago, Hammond, and Gary. Many different industries have located in this area, with a major emphasis on steel mills and electric power generation plants. Both steel mills and power plants use large quantities of coal for fuel, causing the emission of significant quantities of sulfur dioxide and particulates. In addition to fuel use, steel mills can also be a source of particulates, organic emissions from coke ovens, and other pollutants.

National ambient air quality standards (NAAQS) were established under the Clean Air Act, as amended in 1977. The national lakeshore has been designated a class II area, which means that moderate increases in ambient pollution levels will be tolerated, but the pollution levels must remain within the NAAQS. NAAQS consist of two types – primary, for protection of human health, and secondary, for protection of human welfare.

The National Park Service has established a national air quality research and monitoring program that includes a data collection station at park headquarters. Other air quality monitoring stations in the lakeshore area are in Ogden Dunes (operated by the Indiana Department of Environmental Management) and on Bethlehem Steel Corporation property.

The air quality biological effects research program, an additional NPS program, found that biological resources have been affected by air pollutants at Indiana Dunes. Research indicates that there has been a decrease in lichens known to be sensitive to sulfur dioxide (NPS 1988a). The most common air pollution effect on biological resources is foliar

(leaf) injury due to ozone. Foliar injury to vascular plants from ozone has been documented as occurring on several species, including eastern white pine, jack pine, red oak, sycamore, yellow popular, white ash, black cherry, quaking aspen, box elder, willow, basswood, elderberry, sunflower, milkweed, Joe-pie weed, evening primrose, frost grape, and poison ivy. Visible pollution injury to the white and jack pines appeared widely throughout the national lakeshore (Armentano et al. 1984).

A criteria pollutant monitoring program has been established at Indiana Dunes by the National Park Service. The program evaluates pollutant sources of ozone and sulphur dioxide. Primary sources of ozone pollution are organic materials and oxides of nitrogen from motor vehicles, while sulphur dioxide sources are primarily of industrial origin. During 1984-86, ozone levels exceeded the primary NAAQS on four days during 1984 and on no days during 1985 or 1986 at the national lakeshore. Currently, data are insufficient to show a significant trend over time of ozone levels either increasing or decreasing in the lakeshore area. Sulphur dioxide levels monitored during 1980-87 indicated levels about 20 to 40 percent below the primary NAAQS at Indiana Dunes National Lakeshore (NPS 1988a).

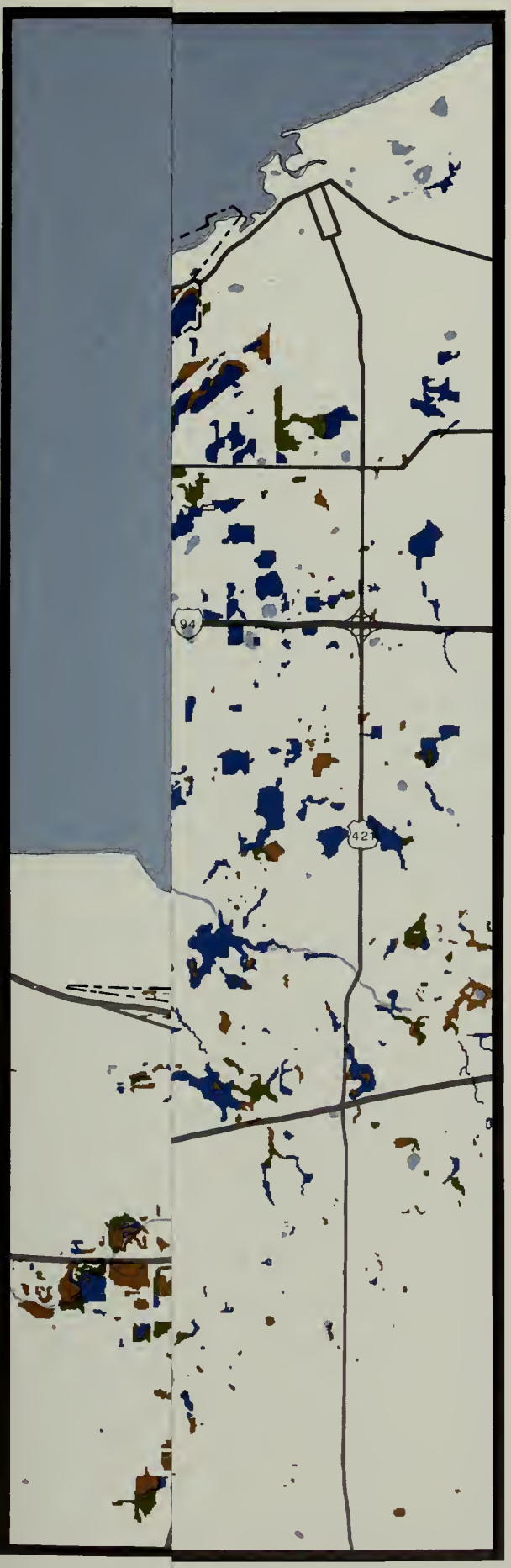
The airborne deposition of toxic trace elements has been measured at Cowles Bog. While very high, the soil concentrations of these elements do not exceed Environmental Protection Agency (EPA) standards. These depositional rates may be extrapolated to be similar to most of the national lakeshore (Cole et al. 1989).

Based on EPA air quality evaluations, designations of attainment or nonattainment for air quality classification have been made. An attaintment designation means that measurements are within the limits specified by the NAAQS and that no adverse health effects are expected to occur. A nonattainment designation indicates that measurements of a particular pollutant sometimes exceed the national standards, and that causes a risk of adverse health effects. For particulates the EPA has designated portions of Lake and Porter counties, including most of the lakeshore areas between the shoreline and I-94, as nonattainment. For sulphur dioxide, the EPA established a nonattainment designation for a portion of Lake County along the lake and the national lakeshore area. Porter County was listed as "cannot be classified." For ozone, the most difficult and widespread air pollution problem in the region, Lake and Porter counties have been designated as nonattainment. LaPorte County has been designated as nonclassified. No air quality designation for carbon monoxide has been made by the EPA for the Lake, Porter, and LaPorte county area. The EPA has approved the Indiana State implementation plan for carbon monoxide, and the standard should be attained in a few years.

Air quality can be expected to improve in the lakeshore area within the next few years. Carbon monoxide, particulates, and sulfur dioxide levels should be reduced as current and future state implementation plans are carried out. Attainment of the ozone standard will require many years of effort since the lakeshore is tied with the entire Chicago metropolitan area, which is among the three or four worst ozone problem areas in the nation (NPS 1989).

Noise

Noise levels resulting from nearby urban and industrial development in and around the national lakeshore sometimes obscure the natural background noises common to a nonurban recreational area. From a legal and regulatory standpoint, noise levels are not considered a major environmental problem. There are no known applicable



WATER / STREAM

LOWLAND FOREST

WETLAND SHRUB

MARSH

FLOODPLAIN

N

0 1 2 MILES

0 1 2 KILOMETERS

FLOODPLAINS AND WETLANDS

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 90 • 626 • 40109

WATER / STREAM

LOWLAND FOREST

WETLAND SHRUB

MARSH

FLOODPLAIN

N

0 1 2 MILES

0 1 2 KILOMETERS

FLOODPLAINS AND WETLANDS

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • JULY 89 • 626 • 10102

laws or regulations relating to noise levels that would apply in the recreational areas of the national lakeshore (Traffic Engineers, Inc. 1989).

A 1979 study of impacts of man-made noise on natural sound by the IIT Research Institute of Chicago (IIT 1980) identifies noise sources obscuring natural sounds within the national lakeshore – motor vehicles, trains, power generation plants, steel mills, residential areas and small towns, aircraft, boats, construction equipment, and others. Actual decibel levels were recorded then; current levels are unknown. Highway and thoroughfare planning guidelines use a noise level of 67dbA (decibels measured with the "A" weighting scale) as a threshold value to avoid excessive traffic noise in surrounding communities. The 1979 study indicates that the actual noise levels usually encountered in the national lakeshore area were below 67dbA. Unless noise conditions have changed from the 1979 study, background noise levels in most of the area the 67dbA guideline could be used for planning future traffic facilities (Traffic Engineers, Inc. 1989).

SOCIOECONOMIC FACTORS

The region surrounding the national lakeshore, like much of the industrial Midwest, has experienced significant economic and demographic changes during the 1980s. A major contributing factor to these changes was an economic recession in the early 1980s that caused sweeping changes in the heavy industries that dominate the local economy. A downturn in the automobile industry caused a parallel drop in the demand for steel and related products. At the same time, many factories and mills began to streamline operations to remain economically viable. The installation of highly efficient automated production systems further reduced the need for manual labor in many plants. Thus, many individuals and families were compelled to leave the area to find work and sustain their livelihood.

The loss in population in some areas of the region has been partially offset by an in-migration of persons who are seeking alternatives to the urban life-style of metropolitan Chicago. Also, many individuals employed in the Chicago area have moved to northwestern Indiana but continue to commute to work in the city.

Table 3 illustrates population dynamics of Lake, Porter, and LaPorte counties for the years 1970-1987. Population projections for the year 2000 are also included in the table. Referring to the table it is possible to determine that the population of Lake County declined by over 65,000 people (11.9 percent) between 1970 and 1987. The population of LaPorte County grew by about three percent from 1970 to 1980, but suffered a 3.7 percent decline from 1980-1987 (resulting in a net population loss of 0.7 percent between 1970 and 1987). The population declines for both Lake and LaPorte counties are primarily a result of out-migration.

Population projections for the three-county area indicate that Lake and LaPorte counties may continue to lose residents through the year 2000, while Porter County will continue to grow. The population of Lake County should stabilize through the 1990s, declining by only 1.5 percent by the year 2000. LaPorte County may suffer a more significant decline in residents during the 1990s, possibly losing more than 15 percent of the 1987 population. The population of Porter County is expected to grow by another 8.6 percent by 2000.

Population dynamics for individual cities and communities within the tricounty region are presented in table 4. Note that this table provides 1986 population estimates for the communities.

Despite the downturn in heavy industry during the early 1980s, manufacturing

Table 3: Population Dynamics: Lake, Porter, and LaPorte Counties, Indiana – 1970-2000

County	1970	1980	Change 1970-1980	Est. 1987	Change 1980-1987	Proj. 2000
Lake	546,253	522,965	-4.3%	481,200	-8.0%	473,863
Porter	87,114	119,816	37.5%	123,100	2.7%	133,710
LaPorte	105,342	108,632	3.1%	104,600	-3.7%	88,640

Table 4: Population Dynamics for Selected Cities, Lake, Porter, and LaPorte Counties, Indiana 1970-1986

City	1970	1980	Change 1970-1980	Est. 1986	Change 1980-1986
Lake County					
Gary	175,416	151,953	-13.4%	136,790	-10.0%
Porter County					
Beverly Shores	946	864	-8.7%	830	-3.9%
Burns Harbor	1,284	920	-20.2%	1,000	8.7%
Chesterton	6,177	8,531	38.1%	8,540	0.1%
Dune Acres	301	291	-3.3%	310	6.5%
Ogden Dunes	1,361	1,489	9.4%	1,510	1.4%
Town of Pines	1,007	962	-4.5%	1,000	4.0%
Portage	19,127	27,409	43.3%	28,420	3.7%
Porter	3,058	3,441	12.5%	3,850	11.9%
LaPorte County					
Michigan City	39,369	36,850	-6.4%	35,600	-3.4%

Table 5: Nonagricultural Wage & Salary Employment Gary-Hammond PMSA and LaPorte County, 1987

	Gary-Hammond PMSA		LaPorte County	
Sector	Employees	% Labor Force	Employees	% Labor Force
Manufacturing	53,900	25.1	12,600	32.2
Nonmanufacturing	161,000	74.9	26,500	67.8

remains the mainstay of the northwest Indiana economy. The manufacturing sector is still the leading employer in both LaPorte County and the Gary-Hammond primary metropolitan statistical area (PMSA), which consists of Lake and Porter counties. About 25 percent of the workers in the PMSA and about 32 percent of the workers in LaPorte County were employed in manufacturing jobs during 1987. Table 5 summarizes employment in LaPorte County and in the Gary-Hammond PMSA for 1987.

The largest employers in the Gary-Hammond PMSA are Inland Steel and USX. Inland Steel employs around 14,800 individuals (down from 21,000 in the mid 1970s), and USX employs about 7,500 (down from 26,000 in the mid 1970s). Other major employers in the PMSA include Bethlehem Steel (6,400 employees), LTV Steel (4,600), National Steel (1,700), and Amoco Oil Company (1,600). The largest employers in LaPorte County are the Anderson Company (1,000 employees), the Sullair Corporation (750), and the Weil-McLain Company (750).

Unemployment in northwestern Indiana has declined substantially since the early 1980s recession. At the peak of that recession, unemployment exceeded 14 percent in all three counties of the region. Lake County had the highest unemployment rate during that period (15.8 percent). As of July 1989, unemployment has fallen to 4.2 percent in Lake County, 3.5 percent in LaPorte County, and 2.2 percent in Porter County. The unemployment rate for the state of Indiana was 3.9 percent in July 1989.

This section provides generalized impacts of each alternative on visitor use, social and economic conditions, cultural resources, and the natural environment. This is not an environmental assessment, although many issues addressed would be included in an environmental assessment. This draft scenic road feasibility study does not include a proposal or an NPS recommendation. If further actions are recommended, this impact analysis would assist in preparation of documents necessary to comply with the National Environmental Policy Act.

IMPACTS ON CULTURAL RESOURCES

The various US and state highways identified as part of the Dunes Highway have been extensively disturbed by human activities. Even so, the possibility of uncovering archeological resources during construction under any of the alternatives still exists. Any NPS project that disturbs new ground would require a field survey by a professional archeologist prior to construction. Such activities as road and/or intersection widening may uncover archeological remains. The same is true for the construction of parking lots, roadside pulloffs, information and/or orientation kiosks, and other developments that require clearing new ground. During construction, the work would be monitored by a professional archeologist. If archeological remains are found during construction, work must cease until the proper authorities have been consulted and a decision is made on how to proceed.

IMPACTS ON NATURAL RESOURCES

Topography/Soils/Vegetation

Overall, development actions proposed under each alternative would not result in any significant impacts on the general topography, soils, or vegetation along the Dunes Highway corridor.

Construction of the east end information/orientation kiosk area would permanently disturb, displace, and compact about 1 acre of vegetation and soil. Minor grading and fill activity would be necessary. Hard-surfacing the access road and parking area would permanently reduce water infiltration to the underlying wetland soils and increase runoff. These impacts would be mitigated by careful site selection.

Construction of the west end information/orientation kiosk would not affect soils or vegetation because the site, currently used as a truck terminal, includes a paved parking lot and two light industrial structures. Minor grading and landscaping would be required within already disturbed areas.

Intersection improvements would not result in any new impacts on existing disturbed upland sandy soils and little impact on vegetation because they are areas that have been previously disturbed. Minor topographic changes from grading and fill would also occur at the intersection improvement sites. In alternative 2, realignment of US 12 at the Bethlehem Steel east gate would require minor grading and fill.

The three interpretive pulloff and parking lot sites (Bailly Cemetery, the industrial overlook, and Long Lake and wetland) would result in permanent disturbance, displacement, and compaction of a total of 1.5 acres of upland dune soils. (The Tremont picnic area already exists, so there would be no new impacts at this

interpretive pulloff.) Some soil erosion and soil compaction could be expected at the periphery of the three pulloff and parking sites. Minor soil erosion would occur until the leveled and sloped soils were revegetated with ground cover and landscaped with woody vegetation. This could be controlled by using accepted landscaping methods to minimize soil erosion and runoff.

The plant materials program would minimize impacts of road, trail, and parking area construction on soils and vegetation.

Wildlife

Designation of the Dunes Highway scenic road would not have a significant impact on the wildlife. Development of the pulloff and parking lot sites would cause a temporary displacement of primarily small mammals, reptiles, amphibians, and upland birds. Some small ground-dwelling mammals might be permanently displaced, but this condition would be minimal. Aquatic wildlife and fish species would not be affected as a result of any development actions. Visitor use of the new pulloffs might slightly reduce the occurrence of wildlife observed, but the reduced abundance of wildlife would be related primarily to the amount of visitor use. Other minor impacts on wildlife caused by visitors could include harassment and territorial infringement (NPS 1986). Overall, wildlife populations would not be affected by any development actions in the three alternatives. If management options are selected that involve the acquisition of new lands or scenic easements, there would be beneficial impacts on wildlife habitat by reducing the amount of land that could be developed.

Threatened and Endangered Species

Scenic route designation along US 12, through Beverly Shores, and future road construction-related activities along the scenic route corridor study area could result in some impacts on known federal and state-listed threatened and endangered plant and animal species. Appendix I indicates the known protected plant and animal species within the road corridor study area and the threatened and endangered species that would be affected by each alternative. Total avoidance, extreme care, and sensitivity to federal and state protected species will be required in areas of known species occurrence.

Water Resources/Water Quality

There would be no adverse impacts on the water resources along the Dunes Highway from the implementation of any of the alternatives. However, if the land acquisition and scenic easement options are implemented, there could be beneficial impacts such as the protection of the watershed from further development and additional impervious surfaces.

There would be no identifiable direct or cumulative impacts on water quality resulting from proposed development actions under any of the alternatives. Construction-related activities for development actions at the Bailly Cemetery, industrial area, and Long Lake and wetland pulloff sites and the east and west end information/orientation kiosk areas might result in temporary turbidity of streams and wetlands from runoff and soil erosion; associated indirect impacts would be minor. (The Tremont picnic area already exists, so there would be no new impacts at that pulloff site.)

The plant materials program would minimize impacts of road, trail, and parking area construction on water quality and water resources.

Floodplains and Wetlands

The Dunes Highway scenic route designated under any of the alternatives would be outside the existing 100-year floodplain zone. The proposed pulloff and parking lot developments, if determined to be within the floodplain, would be excepted (i.e., allowed) actions according to Executive Order 11988 "Floodplain Management" and are not considered to have an impact on floodplains.

Some of the general development actions along the US 12 corridor and Beverly Drive are adjacent to wetlands. The Floodplains and Wetlands map in the "Description of the Study Area" section identifies wetland locations. In alternatives 1 and 3, there would be impacts on wetlands along the scenic road alignment of Beverly Drive due to intersection improvements and road widening. Approximately 8.5 acres would be affected by added fill material within wetlands. Federal compliance regulations require a Corps of Engineers section 404 permit for any disturbance within a wetland. Special consideration would be given to all designated wetlands where development actions are being considered.

Careful siting, design, and construction practices would minimize most wetland impacts. Other wetlands impacts would be mitigated by using retaining walls to minimize the additional area required to widen the existing 18-foot roadways to 22-foot NPS road standards. Where intersection modifications require filling wetlands, adjacent dry land would be modified to replace the area of wetlands that would be lost.

In each alternative, the proposed development actions at the pulloff sites and kiosk areas would not affect any designated wetlands.

Air Quality/Noise

There would be no significant impacts on air quality in the study area resulting from implementation of any alternative. Recreation visitors to the lakeshore make up a very small portion of the total traffic affecting air quality in the region. Present or future use of the recreation facilities are not expected to have any significant effect on air quality in the general lakeshore area (NPS 1989a).

Redirected truck traffic would not have a significant effect on IN 149, IN 249, or US 20 because of the current traffic levels on these routes.

Noise levels would be significantly reduced by the elimination of commercial truck traffic along scenic road segments now used by heavy trucks. Redirected truck traffic would not have a significant effect on the noise level of the new routes. These alternate routes currently have high volumes of heavy trucks with noise levels that would not be significantly affected by additional trucks.

IMPACTS ON VISITOR USE

The designation of a scenic road through Indiana Dunes National Lakeshore would improve the aesthetics of the national lakeshore experience and the visitors' safety. The enjoyment, understanding, and appreciation of the national lakeshore would be enhanced by the development of information centers, waysides, scenic overlooks, and interpretive publications and tapes. The development of bicycle paths or lanes would provide additional cycling opportunities through the national lakeshore. Opportunities for regional cycling tours would also be encouraged if the proposed bike paths could be connected to other trail systems in the area.

The development of scenic loops (or spur trails) in association with the Dunes Highway would provide opportunities for

enjoying areas of the national lakeshore that recreationists might otherwise not visit. The aesthetic appreciation of the national lakeshore could be heightened by the implementation of any of the alternatives and design modifications that are intended to improve the visual quality of the proposed Dunes Highway. The removal of billboards and utility poles and the screening, relocation, or removal of parking lots would make the drive more pleasurable for many motorists.

The removal of heavy tractor-trailer truck combinations from the roadway would reduce the chance for accidents between these vehicles and recreation-oriented traffic. The safety of national lakeshore visitors who drive the scenic road or its spur routes would be improved by lower speed limits, upgraded road surfaces, intersection modifications, widened shoulders, and improved sight distances.

IMPACTS ON SOCIAL AND ECONOMIC CONDITIONS

The designation of the Dunes Highway would impact social and economic conditions in the region immediately surrounding Indiana Dunes National Lakeshore. The removal of heavy trucks from existing US 12 would require such vehicles to travel slightly longer routes while en route to sites along the Dunes Highway or while passing through the area of the national lakeshore. However, because US 20 closely parallels the existing US 12, the length of the diversions would be minor (from 0.8 to 5.9 miles, depending on the specific route).

A study contracted by the National Park Service has estimated the additional miles that heavy trucks would have to travel in an average day if the Dunes Highway were to be designated (Traffic Engineers, Inc. 1989). The study estimates that heavy trucks would have to travel an additional 2,192 miles per day under alternative 1 and an additional 3,329 miles per day under alternatives 2 and 3. Assuming an average operational cost of $1.25 per mile, the total economic impact on the trucking industry would be about $2,800 per day (or an average of about $2.09 per truck, per trip) under alternative 1. The total impact on the trucking industry under alternatives 2 and 3 would be about $4,200 per day (or an average of about $3.17 per truck, per trip).

Rerouting heavy commercial traffic onto alternate roadways would slightly increase the potential for accidents between trucks and other vehicles on IN 149, IN 249, and US 20. The increase for potential accidents on these routes is minimal because of the current traffic volumes and capacity of these routes. This possibility would be further diminished by improvements in the design of the roadways and intersections.

There are no businesses along existing US 12 outside the Burns Harbor industrial complex that are primarily dependent on heavy truck traffic. Thus, the removal of trucks from that roadway should have no economic impact on the local commercial sector.

The removal of billboards from the existing US 12 corridor could result in the loss of sales revenues by local outdoor advertising firms (and businesses doing the advertising).

Improvements to the existing roadway and the development or modification of facilities would create short-term economic inputs to the local economy. Local contractors or laborers could be selected to implement these projects. Similarly, local businesses could provide materials that are needed for construction. Thus, the local economy could accrue income from payments for salaries, services, and supplies.

The actual reconstruction of the roadway or the construction or modification of

facilities would create short-term negative impacts on the area immediately surrounding the projects, such as increased levels of dust, ambient noise, and traffic.

The impacts of rerouting US 12 onto Sheridan and Woodlawn avenues are addressed in the Federal Highway Administration's 1989 environmental impact statement for the US 12 relocation (FHWA 1989).

The acquisition of property for rights-of-way would result in capital gains for private landowners. In most situations, the sale of private property would necessitate the abandonment of any traditional uses that have occurred on that land.

No residences would be displaced by development actions in alternatives 1 and 3. One existing manufacturing facility and one residence would be removed in alternative 2 to permit the new access road to the Bethlehem Steel east gate. Lands that might be sold to the government would lose their potential for commercial, industrial, or residential development. There would be some loss of tax revenues to local government.

The sale of scenic or access easements on private properties would also create monetary gains for landowners, but some landowners might have difficulty adjusting to restrictions of use that the easements impose. Easements would require additional national lakeshore operating funds for monitoring and enforcement. Easements would also limit the development potential of private lands.

The designation of scenic loops along Beverly Drive, Kemil Road, Central Avenue, Broadway Avenue, and Lakeshore County Road would increase the volume of recreation traffic along those roadways. An increase in traffic would, in turn, result in an increase in the ambient noise level in the neighborhoods adjacent to the loops. Commercial establishments that are on or near the scenic loops would experience an increase in business if the loops were implemented.

The designation of the Dunes Highway would have impacts on other roads in the regional system that are not otherwise noted in this section. It is difficult to predict all the changes in traffic flow patterns that might occur throughout the system as a result of roadway improvements and changes in traffic regulations. Along roads where traffic would increase (as noted in the following section on "Traffic Conditions"), there would be an increase in passerby business at commercial establishments, an increase in local ambient noise levels, and a decrease in the overall aesthetic quality of the area. Along roads where traffic decreases, there would be a decrease in passerby business at commercial establishments, a decrease in local ambient noise levels, and an increase in the overall aesthetic quality of the area.

Reduction of Accident Costs

The implementation of any of the three alternatives would result in a reduction in the total annual costs of accidents along US 12. This reduction would be facilitated by design improvements at intersections and at other points along the possible scenic route. Table 6 summarizes the existing annual accident costs for each of the potential routes for the scenic road and the estimated future annual accident costs (should all design improvements be implemented).

TABLE 6: EXISTING AND ESTIMATED FUTURE ANNUAL ACCIDENT COSTS *

Route	Existing Annual Accident Costs	Estimated Annual Accident Costs	Estimated Annual Reduction	Percent Potential Reduction
Alternative 1	$ 451,700	$ 395,100	$ 56,600	-12.5
Alternative 2	$ 457,400	$ 398,100	$ 59,300	-13.0
Alternative 3	$ 455,300	$ 395,600	$ 59,700	-13.1

Source: Traffic Engineers, Inc., 1989

* Costs are presented in 1989 dollars.

Loss of Roadway Funding

The implementation of alternative 1 or 3 with NPS acquisition of road rights-of-way would result in the loss of some of the state funding that Beverly Shores receives for local roadways (Traffic Engineers, Inc. 1989). Under alternative 1, about 4.5 miles of local roadway would be designated as scenic road. This would result in the loss of about $2,500 per year in roadway funding (or 8.3 percent of the total 1988 distribution to Beverly Shores). If alternative 3 was implemented, about 5.7 miles of local roads would be designated as scenic, and the community would lose about $3,200 in roadway funding (or 10.6% of the total 1988 distribution). The implementation of alternative 2 would have no impact on state funding of local roadways. There would be no loss of state roadway funding by the Town of Pines by any of the alternatives because no town-maintained roads would be designated under any of the alternatives.

The loss of roadway funding by Beverly Shores could be mitigated by managing the roadways through Beverly Shores through cooperative agreements rather than acquisition of the rights-of-way. Cooperative agreements would require boundary adjustments and would provide for NPS road maintenance and law enforcement.

Traffic Conditions

The designation of US 12 as a scenic road would have a number of impacts on traffic conditions on area roadways. To fully understand these impacts, one needs to be familiar with existing traffic conditions as well as projected conditions if a scenic road was not designated.

In 1989, traffic volumes on US 12 ranged from a low of 4,360 average daily traffic (ADT) between Kemil Road and Broadway Avenue to 12,950 ADT between IN 149 and IN 249. Traffic volumes on US 20 for 1989 ranged from 11,330 ADT between IN 520 and Porter/LaPorte County Line Road to 25,900 ADT between Lake Street and IN 51 (Traffic Engineers, Inc. 1989).

If US 12 was redesignated as a scenic highway, traffic volumes would be reduced between 2 percent (between IN 149 and IN 249) and 54 percent (between Porter/LaPorte County Line Road and Beverly Drive) by the year 2000. Traffic volumes on US 20 would increase between 1 percent (between IN

149 and IN 249) and 15 percent (between Mineral Springs Road and IN 49) over the same period as a result of redesignation. The level of service at US 12 intersections would either be maintained at the current level or improved as a result of redesignation (Traffic Engineers, Inc. 1989).

Traffic increases would not have a significant effect on traffic flow on US 20. There would be increases in traffic volume, which could be accommodated by the existing roadways. Roadway traffic capacity is determined by intersections. To determine the impacts of increased traffic on US 20, the NPS traffic consultant, Traffic Engineers, Inc., compared the existing level of service at intersections with low levels of levels of service ratings along US 20 with projected increases in traffic levels resulting from the designated scenic highway.

With intersection improvements identified in the Traffic Engineers, Inc., report, existing intersections with low level-of-service ratings would not have lower level-of-service ratings with or without the additional traffic resulting from scenic highway designation. This illustrates that the existing roadways and intersections have the capacity to safely accommodate an increase in traffic.

In addition to removing all heavy truck traffic from the roadway, the establishment of the Dunes Highway would also reduce the overall volume of through-traffic along the roadway. Local residents and employees of area businesses and industry are not likely to alter their regular travel routes significantly. However, local people who use US 12 to travel between Michigan City and Gary are more likely to follow the new US 12 alignment because of increased travel time on the Dunes Highway resulting from reduced speed limits and increased law enforcement. Reduced traffic volume would decrease customer capture opportunities for businesses along the highway. The decrease in traffic would increase the aesthetic quality of residential areas along the route.

The Dunes Highway designation would attract more recreation travelers to the route, especially during the summer months. An increase in recreation traffic would mean an increase in tourist expenditures at local businesses. However, it is very difficult to predict either the potential increase in tourist traffic or the potential increase in tourism expenditures that would result from the creation of the scenic road. Regional road construction projects and detours, changes in traffic counting methods, changes in recreation travel patterns, and the overall health of the national economy would all influence the volume of traffic and tourism expenditures along the roadway. It is unknown if an increase in tourism expenditures at local commercial establishments would offset the loss of business currently associated with customers who stop while driving between Michigan City and Gary.

Impacts of Possible Land Acquisition and Design Regulations

Management options 1, 4, and the no-action alternative do not involve any scenic easements or land acquisition and would have no impacts from development actions. Management option 2, with NPS management of the entire scenic corridor, would have the greatest impact on landowners. Management option 3 would have moderate impacts from land acquisitions.

Areas that could be affected by land acquisition and land use regulations under management options 2 and 3 were identified by using the potential scenic corridor, existing land use, existing wetlands, and national lakeshore and state park lands. Through the use of computerized GIS analysis, vacant lands within the potential scenic corridor that could be developed were identified. These areas, totaling 3,347 acres, are

shown on the Potential Developable Lands map. The future uses of these vacant lands can be predicted by combining the vacant lands map with a generalized composite zoning map as shown on the Potentially Developable Lands with Composite Zoning map. Appendix J shows a summary table for the character of lands within the US 12 corridor.

IMPACTS OF NO ACTION

The principal impact of no scenic road designation would be the continuation of the hazardous mix of trucks and recreational vehicles on US 12. These traffic hazards would increase as the number of trucks traveling on US 12 increases. Accidents between trucks and tourists would be likely because of the diverse nature of the two types of traffic. Heavy trucks are generally less capable of avoiding accidents due to their size and maneuverability. Moreover, many tourists are less likely to be attentive to surrounding traffic while driving through scenic areas.

If a scenic road was <u>not</u> designated, traffic on US 12 in the year 2000 would increase by 20 percent (between IN 149 and IN 249) to 26 percent (between Lake Street and Lake/Porter County Line Road). Traffic on US 20 in the year 2000 would increase by 12 percent (between Porter/LaPorte County Line Road and US 421) to 22 percent (between US 12/US 20 and Lake Street) (Traffic Engineers, Inc. 1989).

There would be increases in tourism; however, these increases would be at a lower rate than with designation of the scenic road.

WATER / STREAM

STATE AND NATIONAL PARK LANDS

TERRESTRIAL SHRUB / UPLAND FOREST

AGRICULTURE / GRASS

SAND

DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT

N

0 1 2 MILES

0 1 2 KILOMETERS

POTENTIALLY DEVELOPABLE LANDS

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 626 • 40113

WATER / STREAM

STATE AND NATIONAL PARK LANDS

TERRESTRIAL SHRUB / UPLAND FOREST

AGRICULTURE / GRASS

SAND

DEVELOPED / LAND NOT SUITABLE FOR DEVELOPMENT

N

0 1 2 MILES

0 1 2 KILOMETERS

POTENTIALLY DEVELOPABLE LANDS

US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 626 • 40113

WATER / STREAM

SINGLE FAMILY RESIDENTIAL

MULTI-FAMILY RESIDENTIAL

COMMERCIAL / BUSINESS

LIGHT INDUSTRY

HEAVY INDUSTRY

NOT SUITABLE FOR DEVELOPMENT

ZONING NOT AVAILABLE

N

0 1 2 MILES

0 1 2 KILOMETERS

POTENTIALLY DEVELOPABLE LANDS WITH COMPOSITE ZONING

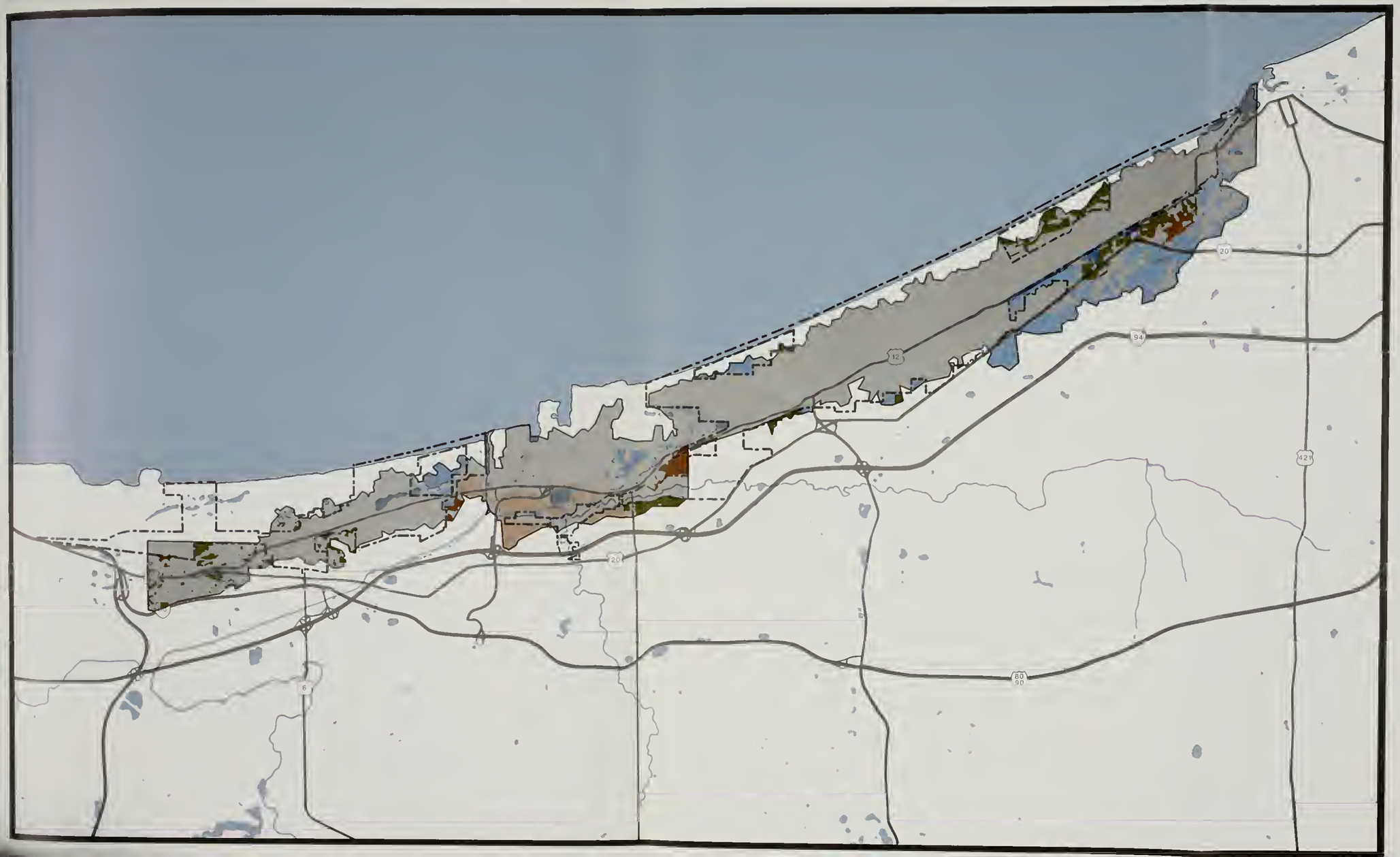
US 12 SCENIC ROAD STUDY

INDIANA DUNES NATIONAL LAKESHORE

LAKE, PORTER AND LA PORTE COUNTIES • INDIANA

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

DSC • AUG 90 • 626 • 40112



WATER / STREAM

SINGLE FAMILY RESIDENTIAL

MULTI-FAMILY RESIDENTIAL

COMMERCIAL / BUSINESS

LIGHT INDUSTRY

HEAVY INDUSTRY

NOT SUITABLE FOR DEVELOPMENT

ZONING NOT AVAILABLE

N

0 1 2 MILES

0 1 2 KILOMETERS

POTENTIALLY DEVELOPABLE LANDS WITH COMPOSITE ZONING

US 12 SCENIC ROAD STUDY
INDIANA DUNES NATIONAL LAKESHORE
LAKE, PORTER AND LA PORTE COUNTIES • INDIANA
UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE
DSC • AUG 90 • 626 • 40112

ESTIMATED MAINTENANCE COSTS

The following costs are for the maintenance of the scenic road. These costs would apply to any of the alternatives because approximately the same mileage is involved under the three alternatives.

ONE-TIME COSTS

Three patrol vehicles	$ 52,300
One 50 horsepower tractor with flail mower	45,000
One 5- to 6-yard dump truck	43,000
Two heavy-duty highway snowplows	10,500
One backhoe with four-wheel drive, extendahoe, and four-in-one bucket	84,000
One grader	125,000
Two cinder/salt spreaders	14,500
One combination tack oil/crack sealing machine	19,700
One light-duty steel wheel roller	19,000
One medium-duty equipment trailer	6,300
One portable hand point striper	5,500
Three-quarter ton pickup	10,000
Boom truck	40,000
Low-profile 20-ton trailer	15,000
One 50,000 gvw tandem axle dump truck	70,000
TOTAL	**$ 5,598,000**

ANNUAL OPERATING COSTS

Six protection rangers, GS-7	$ 184,400
One supervisory protection ranger, GS-9	36,500
Two motor vehicle operators, WG-7	58,623
One engineering equipment operator, WG-8/9	31,961
Four seasonal motor vehicle operators, WG-5 (9 mo.)	88,622
Road repair materials	20,000
Hazardous tree removal	25,000
Snow/ice control materials	10,000
Sign maintenance	10,000
Drainage maintenance	15,000
Litter pickup	25,000
Vehicle/equipment maintenance	10,000
TOTAL	**$ 515,106**

US 12 SCENIC ROAD DEVELOPMENT QUANTITIES AND COSTS

ALTERNATIVE 1	QUANTITY	COST*
Intersection Improvements		
US 12 and IN 249	LS	$50,000
US 12 and IN 149	LS	50,000
US 12 and IN 49	LS	56,000
US 12 and Furnessville Road	LS	3,000
US 12 and Kemil Road	LS	1,000
US 12 and Broadway Avenue	LS	1,000
US 12 and Lakeshore County Road	LS	1,000
US 12 and IN 520	LS	8,000
US 12 and Beverly Drive	LS	95,000
Beverly Drive and Lakeshore County Road	LS	1,000
Beverly Drive and Broadway Avenue	LS	56,000
Interpretive Pulloffs		
Tremont Picnic Area		
Interpretive media	LS	$ 6,000
Bailly Cemetery		
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Trail connection (1,125 ft by x 4 ft)	500 SY	10,000
Parking and roadway pavement	1,350 SY	54,000
Curb and gutter	750 LF	30,000
Interpretative media	LS	6,000
Trash receptacles	2 ea	1,000
Information/Orientation Kiosk		
East Kiosk – US 12 and Beverly Drive		
Sidewalk (6 ft by 100 ft)	70 SY	$ 4,000
Parking and roadway pavement	1,350 SY	5,000
Interpretive/informational media	LS	12,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Plant Materials/Revegetation Program		70,000
TOTAL		**$ 555,000**

SY = square yards
LF = linear feet
LS = lump sum

* Costs presented are gross figures, which include advance planning, project planning, construction supervision, and facilitating administrative services. Estimates are class "C," meaning they are derived from average costs for similar facilities in other NPS areas. This note applies to all three alternatives.

ALTERNATIVE 2	QUANTITY	COST*
Intersection Improvements		
US 12 and Lake Street	LS	$ 3,000
US 12 and Lake/Porter County Line Road	LS	72,000
US 12 and National Steel entrance	LS	64,000
US 12 and IN 249	LS	193,000
US 12 and IN 149	LS	81,000
US 12 and Oak Hill Road	LS	3,000
US 12 and Bethlehem Steel main & east gates	LS	374,000
US 12 and IN 49	LS	80,000
US 12 and Furnessville Road	LS	3,000
US 12 and Kemil Road	LS	1,000
US 12 and Broadway Avenue	LS	1,000
US 12 and Lakeshore County Road	LS	1,000
US 12 and IN 520	LS	8,000
US 12 and Beverly Drive	LS	5,000
US 20 and IN 520	LS	72,000
Construct Road Extension to Bethlehem		
Steel East Gate (3,200 ft by 44 ft; two 12-ft lanes with 10-ft shoulders)	15,700 SY	$ 67,000
Obliterate Pavement		
Portage-Burns Waterway and US 12 (1,945 ft by 44 ft)	9,300 SY	$ 120,000
Cross-overs in 4-lane segment of US 12 (70 ft by 50 ft x 4 ft)	1,600 SY	21,000
Ramps to IN 249 bridge to Port of IN (4,200 ft by 24 ft)	11,200 SY	144,000
IN 249 alignment		
to US 12 (800 ft by 70 ft)	6,200 SY	80,000
to IN 249 overpass (2,400 ft by 38 ft)	10,100 SY	130,000
Interpretive Pulloffs		
Tremont Picnic Area		
Interpretive media	LS	$ 6,000
Bailly Cemetery		
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Trail connection (1,125 ft by 4 ft)	500 SY	10,000
Parking and roadway	1,350 SY	54,000
Interpretive media	LS	6,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Industrial Area Overlook		
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Interpretive media	LS	6,000
Parking and roadway	1,350 SY	54,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000

ALTERNATIVE 2 (cont.)	QUANTITY	COST*
Long Lake and Wetland Overlook		
Sidewalk (6 ft by 100 ft)	70 SY	$ 4,000
Interpretive media	LS	6,000
Parking and roadway	1,350 SY	4,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Information/Orientation Kiosks		
West Kiosk – US 12 at Hobart Road		
Parking and roadway pavement	1,350 SY	$ 54,000
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Interpretive/informational media	LS	12,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
East Kiosk – US 12 at Beverly Drive		
Parking and roadway pavement	1,350 SY	54,000
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Interpretive/informational media	LS	12,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Plant Materials Program		70,000
TOTAL		**$ 1,979,000**

ALTERNATIVE 3	QUANTITY	COST*
Intersection Improvements		
US 12 and US 20	LS	$ 10,000
US 12 and Clay Street	LS	40,000
US 12 and Lake Street	LS	3,000
US 12 and Lake/Porter County Line Road	LS	72,000
US 12 and IN 249	LS	35,000
US 12 and IN 149	LS	35,000
US 12 and Bethlehem Steel east gate	LS	6,000
US 12 and IN 49	LS	56,000
US 12 and Furnessville Road	LS	3,000
US 12 and Kemil Road	LS	1,000
US 12 and Broadway Avenue	LS	1,000
US 12 and Lakeshore County Road	LS	1,000
US 12 and IN 520	LS	8,000
US 12 and Beverly Drive	LS	137,000
Beverly Drive and Lakeshore County Road	LS	81,000
Beverly Drive and Broadway Avenue	LS	5,000
Beverly Drive and Kemil Road	LS	81,000
US 20 and IN 520	LS	72,000
Interpretive Pulloffs		
Tremont Picnic Area		
Interpretive media	LS	$ 6,000
Bailly Cemetery		
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Trail connection (1,125 ft by 4 ft)	500 SY	10,000
Parking and roadway pavement	1,350 SY	54,000
Interpretive media	LS	6,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Long Lake and Wetland		
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Parking and roadway pavement	1,350 SY	54,000
Interpretive media	LS	6,000
Trash receptacles	2 ea	1,000
Curb and gutter	750 LF	30,000
Information/Orientation Kiosks		
West Kiosk – US 12 at Hobart Road		
Parking and roadway pavement	1,350 SY	$ 54,000
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Trash receptacles	2 ea	1,000
Interpretive/informational media	LS	12,000
Curb and gutter	750 LF	30,000
East Kiosk – US 12 at Beverly Drive		
Parking and roadway pavement	1,350 SY	54,000
Sidewalk (6 ft by 100 ft)	70 SY	4,000
Trash receptacles	2 ea	1,000
Interpretive/informational media	LS	12,000
Curb and gutter	750 LF	30,000
Plant Materials Program		70,000
TOTAL		**$1,125,000**

CONSULTATION AND COORDINATION

The following agencies have been consulted and have provided assistance and information in the preparation of this document.

Advisory Council on Historic Preservation
Audubon Society
Bethlehem Steel Corporation
Burns International Harbor (Port of Indiana)
City of Gary
Chambers of Commerce
Counties of Lake, LaPorte, and Porter
Department of Defense
  U.S. Army Corps of Engineers
Indiana Department of Natural Resources
  Division of Fish and Wildlife
  Division of Nature Preserves
  Division of Water
Izaak Walton League of America
Lake Michigan Marina Development Commission
Little Calumet River Basin Development Commission
National Steel Corporation, Midwest Division
Northern Indiana Public Service Company
Northwestern Indiana Regional Planning Commission
Save the Dunes Council
Sierra Club
State Historic Preservation Officer
Towns of Ogden Dunes, Porter, Portage, Chesterton, Beverly Shores, the Town of Pines, and Lake Station
U.S. Department of Agriculture
  Soil Conservation Service
U.S. Department of the Interior
  Fish and Wildlife Service
  Geological Survey
U.S. Environmental Protection Agency

SCOPING ISSUES MEETINGS

The planning team has met with local organizations, interest groups, industry, and government agencies and officials (local, county, city, state, and federal) to identify issues and inform affected parties about the US 12 scenic road feasibility study process and status. The planning team has used the national lakeshore Friends newsletter (*Singing Sands*), the US 12 subcommittee of the superintendent's advisory group, special interest groups, industries, and local news media (radio and newspapers) to inform the public of the planning efforts and seek input on the issues to be addressed.

The planning team met with the US 12 subcommittee of the superintendent's advisory group on several occasions to discuss issues and alternatives. A presentation and discussion was held with the superintendent's advisory group on July 28, 1989. Public scoping meetings for the feasibility study were held at the Douglas Center and the NPS visitor center in June 1989. In addition, meetings were held with local, state, and federal agency representatives to identify issues and to discuss preliminary alternatives. Public meetings will be held on the draft *US 12 Scenic Road Feasibility Study*.

APPENDIXES

APPENDIX A: OVERVIEW OF SELECTED STATE SCENIC ROAD PROGRAMS

ARIZONA

Program Coverage

In 1982 Arizona state law (A.R.S. 41-52 through 41-518) established a scenic road program to be administered by the Arizona Department of Transportation (ADOT). The law directed ADOT to publish regulations that define criteria and provide a process for establishing and designating three different types of scenic roads:

1) Parkway – an area acquired for the protection of geographic or scenic values or natural flora

2) Historic road – a road of historical importance in the settlement and development of Arizona

3) Scenic road – a road through a scenic area

Eight routes have been designated as of July 1988.

Management of Designated Roads

For each category the rules provide that ADOT, the Federal Highway Administration, the county, or the city may allow an exemption from normal construction and maintenance standards if necessary to protect and enhance special features of unique natural and cultural resources. Each road is also signed as a parkway, historic road, or scenic road.

For parkways, designation also affects local government review of subdivision proposals on adjacent land due to a requirement that access roads must be spaced on adjacent land due to a requirement that access roads must be spaced no closer than 1 mile apart except for existing roads. Public agencies may not approve a subdivision bordering a parkway unless the plat is accessible from the access roads and would accommodate access from unsubdivided adjoining land or has some other access that does not cross parkway property.

The law also enables the director of ADOT to acquire lands for establishment or improvement of designated roads, although use of condemnation is prohibited. The State Highway Users fund and other roadwork funding sources can be applied to parkway, historic, and scenic road projects.

Designation Process

The law established a nine-member advisory committee comprised of six representatives of the public who are appointed by the governor and one representative each from the Parks Board, ADOT, and the Historical Society. The advisory committee is responsible for evaluating designation requests and recommending action to the Transportation Board through the ADOT. The advisory committee's final decisions are made in a public hearing. The Transportation Board has the final designation authority.

Any individual or organization can initiate the designation process, although the local entity with jurisdiction over the road must endorse proposals. To begin the process, the initiator submits a report containing information needed to evaluate the road's scenic quality to the advisory committee. The information includes a natural and cultural resources inventory; landownership; land use; zoning; photographs of outstanding and representative scenery; information and recommendations defining the desirable "zone of influence" needed to protect the resource areas along the proposed designated road; and a statement on the impacts of designation.

The advisory committee then systematically evaluates the extent and quality of historic or scenic, natural, and cultural resources based on the criteria and ranking procedure established in the regulations. The criteria and ranking procedure are presented briefly below by category:

For **historic roads**, evaluations are based on four factors, rated on a scale of 1 to 4: relative importance of a route or place to the cultural heritage within a national, state, regional, or local framework; significance of the contribution of the historic place or road to the exploration, settlement, or development of Arizona; proximity (both physical and visual access); and uniqueness (the relative scarcity or abundance of a given type of historic resource).

For **scenic roads**, evaluations are based on four factors, rated on a scale of 1 to 7 (including subfactors): uniqueness; vividness; distinctiveness of visual impression; intactness; and degree of natural condition.

The criteria used to evaluate designation of a road as a **parkway** include the criteria for historic and scenic roads; whether appropriate space will be available for parking and visitor facilities; whether property rights can be obtained by the Transportation Board for controlled access and development; and whether the 1-mile minimum distance between access road requirement is met.

CALIFORNIA

Program Coverage

In 1963 California state law (S.B. 1467) established the California scenic highway program to be administered by the California Department of Transportation (Caltrans). In 1981, legislation (S.B. 512, Ch. 604) modified the program slightly by creating a new advisory committee. The law directed Caltrans to prepare a master plan that identifies state highways that are eligible for scenic designation and to publish regulations that define criteria and establish a designation process. A separate process using similar criteria was also established to enable counties to request and receive official state designation of county roads. The following discussion is for the state highway program.

The program is intended to protect natural scenic beauty by identifying those portions of the state highway system that, together with adjacent corridors, require special scenic conservation treatments. The adjacent scenic corridor is defined as the area of land generally adjacent to and visible from the highway. Although natural scenic beauty is emphasized, historical significance is included as an element of scenic potential.

As of July 1988, California had designated 1,022 miles of state scenic road. A total of 5,870 miles are eligible for designation. In addition, 47 miles of county scenic roads have been designated.

Management of Designated Roads

Designated scenic highways and adjacent corridors are protected by several locally adopted programs that must meet minimum requirements established by section 261 of the Streets and Highway Codes. These include regulation of land use and density within the scenic corridor; establishment of a permit or design review authorities for review of proposed developments and projects, the appearance of structures and equipment, and for earth-moving and landscaping activities; and control of outdoor advertising. Official state designation of a scenic highway is predicated on local adoption of an adequate protection program. Each highway is also signed.

Designation Process

The law established the Departmental Transportation Advisory Committee (DTAC), comprised of 16 members appointed by the legislature. The DTAC is responsible for reviewing designation requests and recommending approval or disapproval to the director of Caltrans as well as for recommending program criteria to Caltrans. The director has the actual designation authority.

To be eligible for designation, a route must first be included in *The Master Plan of State Highways Eligible for Official Scenic Highway Designation* prepared by Caltrans under the 1963 law. The plan is amended through legislative action.

Once a route is included in the master plan, local governments with jurisdiction over adjacent land can initiate the designation process by submitting a resolution of intent to the DTAC through Caltrans staff. The resolution must include a map of the suggested scenic corridor boundaries and route; a description of the surrounding area; and an inventory of elements that make the route scenic, such as facts of historical significance, vistas, topography, stands of trees, and rock outcrops.

If the DTAC approves the resolution of intent, it directs the local jurisdiction to prepare and adopt a protection program in cooperation with local citizens' committees, affected property owners, special interest groups, and the general public. Once the protection program is in place, the local government submits a formal request for designation, which includes the protection program, a summary of the public involvement, a description of proposed realignments or route improvements, and further actions, if any, that need to be taken on the transfer of eligibility. The DTAC reviews the submittal to determine if the protection program is adequate, and if so, it recommends to the director to designate.

The regulations also include provisions for monitoring, compliance, and revocation to maintain the consistency and integrity of the scenic highways program. Local jurisdictions submit a statement of compliance with protection measures once every five years. The department, with the advice of the DTAC, is authorized to revoke official scenic highway designations.

CONNECTICUT

Program Coverage

Since 1981, Connecticut has had a Scenic Municipal Roads statute (P.A. 81-401, S. 1,4) that authorizes any town, city, or borough to designate scenic routes or segments by ordinance. In June 1987, state roads became eligible for such coverage by Public Act 87-280. The law directed the Department of Transportation (DOT) to publish regulations that define criteria and establish a process for designating scenic roads using an advisory committee comprised of state agency representatives. To be eligible for designation, a state road must have significant natural or cultural features, a minimum length of 1 mile, and adjacent development that is compatible and does not detract from the character of the highway area.

Management of Designated State Highways

Special construction and maintenance standards can be established for scenic roads as necessary to protect their scenic values. In addition, an advisory committee reviews proposed improvements for adverse impacts on the road's scenic quality. If the committee finds a significant adverse effect may occur, it recommends alternative actions to the agency that proposed the improvements. Ultimately, the commissioner of transportation determines whether or not the project should proceed.

Designation Process

Under the law, the commissioner of transportation establishes a Scenic Road Advisory Committee, which includes representatives from the Departments of Transportation, Environmental Protection, and Economic Development. The committee is responsible for reviewing and evaluating designation requests and for recommending action to the commissioner. As discussed above, the committee also participates in the management of designated roads.

Any agency, municipality, group, or individual can initiate the designation process. The initiator must submit a report that contains the following: a description of natural and cultural resources and features of scenic interest; existing land use; photographs of outstanding and representative scenery;

and a list of properties listed on the national or state historic registers. The advisory committee systematically evaluates the extent and quality of historic or scenic, natural, and cultural resources as a basis for recommending in favor of or against designations. The commissioner has the actual authority to designate scenic roads.

IDAHO

Program Coverage

In the mid 1970s, the Idaho Transportation Board initiated a scenic highway sign program that was intended to assist tourists in exploring the state's attractions. In 1985, Idaho state law (H.B. 230) expanded the sign program. The law called for a study of the state's primary and interstate highway systems to identify historical and cultural attractions that warrant signs as well as to prepare comprehensive guidelines on sign placement and design. As of July 1988, seven scenic routes had been designated and would be signed.

Management of Designated Roads and Sites

Designation results in installation of signs.

Designation and Signing Process

The Idaho Travel Council, in cooperation with the Idaho Department of Transportation, was authorized to conduct the study. The Idaho Travel Council is a seven-member council under the Department of Commerce that is responsible for promoting travel and tourism throughout Idaho. Members are appointed by the governor.

The primary initial mechanism for identifying and designating routes is the sign study. Through a periodic review, new locations for signs are identified, as are sites where signs should be removed.

The following criteria are used to identify eligible routes: scenic attractions must be unique with respect to access by the motoring public; historic attractions must be listed on the State or National Register of Historic Places and include either an interpretive center and/or guided tours or buildings or visible ruins with an interpretive marker; and cultural attractions must be considered a museum or a religious, educational, or scientific institution.

MAINE

Program Coverage

The Maine Scenic Highway Board (c. 453, P.L. 1969) was established in 1969 to develop and adopt procedures, rules, and regulations for the designation and development of scenic highways and the preservation of scenic values in highway corridors. Before it was abolished in 1972, the board designated five sections of highway. The same law that abolished the board directed the commissioner of the Maine Department of Transportation (MDOT) to establish procedures and criteria needed to preserve and develop the natural scenic beauty along and adjacent to state or state-aid highways.

Eight segments totaling 183 miles have been designated to date.

Management of Designated Roads

The Maine Scenic Highways Board recommended projects or policies to MDOT and the Department of Conservation as part of the designation process. Examples of such recommendations include

construction of boat launches, rest areas and turnouts, selective clearing to improve views, or modifications to potentially detrimental maintenance and construction practices.

Under the current state scenic highway program, MDOT may acquire land for roadside development to preserve and develop natural scenic beauty. The law explicitly states that MDOT may establish and maintain rest areas, turnouts, and parking strips. Designated highways are signed and outdoor advertising adjacent to designated highways is subject to the same restrictions applicable along interstate and primary highways. MDOT also has certain regulatory authorities concerning utilities. Visual impacts are considered in reviewing permit applications involving designated scenic highways.

The following factors are considered in determining the eligibility of a road for designation: scenic values, safety, economic implications, preservation of scenic values, and compatibility with other national, regional, and local conservation plans.

Designation Process

Information on the MDOT designation process was not available at the time of this writing.

MINNESOTA

Program Coverage

Since 1965, Minnesota has had several programs related to scenic roads. In 1965, Minnesota state law (Minn. Stat. Par. 173.04) granted the Minnesota Department of Transportation (MnDOT) the authority to control outdoor advertising in areas adjacent to designated interstate or primary highways. Under this program, 105 miles of interstate and 3,774 miles of primary trunk highways have been so designated. In 1971 state legislation authorized a program to improve visual quality problems caused by salvage yards.

Through legislative action, a total of 18 routes of state, county, and local roads have been designated as memorials to specific people or groups, or as trails with historical interest or special attractions. Some roads have also been designated in part because of scenic quality.

Minnesota is also active in the federally sponsored Great River Road Program to create a scenic road system along the Mississippi River from its source near Lake Itasca to the Gulf of Mexico. Minnesota provides approximately 560 miles of scenic, recreational, and historic parkway-like roads parallel to the Mississippi River. Rest areas, scenic overlooks, day-use parks, bicycle trails, water access, and roadway improvements are included.

In 1986, Minnesota state law directed MnDOT to consult with the Department of Natural Resources and establish a program that promotes recreation enhancement along state highways in areas of unusual scenic interest. Areas of unusual scenic interest include major recreation areas, historic areas, and major publicly and privately owned tourist attractions.

Development of the program is underway and is described in the draft plan entitled *Highways in Recreation Areas Plan*. The draft plan provides that MnDOT can establish unique and scenic highway designations for highway sections with a minimum length of 1 mile (about 1-1/2 minutes of viewing time) that traverse an area of unusual scenic interest or provide a view of an area of unusual scenic interest. Scenic interest includes natural, cultural, or geologic characteristics of statewide significance or views of sites having statewide significance.

Management Implications of Designation and the *Highways in Recreation Areas Plan*

Under the law the plan must provide for enhancement of recreational uses in identified areas by construction of new recreation facilities or the improvement of rehabilitation of existing recreation facilities. Proposed improvements are addressed through the ongoing transportation planning process.

Designated segments may receive special consideration for management; maintenance (wildflowers/grasses); the development of scenic overlooks and interpretive pulloffs; aesthetic design detail to enhance the character of the segment; design considerations to protect or enhance the scenic/natural/cultural character; and purchase of scenic easements.

Designation Process

According to the draft plan, any agency or group can submit a designation request to MnDOT. The submittal must include information such as how the highway segment meets established criteria, the purpose of identifying the segment, development and management guidelines, source of funding for development and ongoing maintenance activities other than those that might be reasonably expected of MnDOT, and a listing of regulations, permits, and policies that may affect development/maintenance of the segment.

In addition to the 1-1/2 mile requirement for length, no roadway will be designated as a unique and scenic highway segment unless it meets one of the following criteria: it is a scenic route providing access to a major regional attraction; it is the best example of a type of natural or man-made landscape peculiar to that area of the state or uniquely different from any other route in the state so that a balance in scenic routes is provided; or the scenic natural, historic, or cultural character of the area through which the road passes could become significant on a statewide or national basis.

OHIO

Program Coverage

Ohio participates in several programs related to scenic roads, including the Great Lakes Circle Tour, a multistate effort to promote tourism in the Great Lakes/Saint Lawrence coastal region.

In 1985 the Ohio Department of Transportation (ODOT) revised a 1980 directive on scenic highways (DH-0-209). This revision established criteria, policies, and procedures for designating rural state highways as scenic roads. Scenic highways are defined as rural roads that pass through, traverse, or connect areas of scenic, historic, or recreational interest.

Approximately 40 routes have been designated to date.

Management of Scenic Roads

Designated roads receive special consideration in construction and maintenance activities. In addition, turnouts may be provided for appropriate locations. Routes are also marked with scenic route signs and identified on the Ohio transportation map.

Designation Process

The director of ODOT has the authority for designating scenic highways. The director may consider suggestions from garden clubs, historical societies, landscape groups, and other interested parties. The criteria applied in selecting routes for designation include the attractiveness and number of scenic areas adjacent to the route; the variety of different landscapes traversed by the route; the effectiveness with which the route would link specific scenic, historical, recreational, industrial, or agricultural areas of interest; the availability of individual routes, or combinations of routes, that can be conveniently used for weekend or one-day sight-seeing trips; and connection with or proximity to major state or interregional routes.

OREGON

Program Coverage

A 1983 Oregon state law (S.B. 643, amended 1985) established a state scenic highway program to be administered by the Oregon Department of Transportation (ODOT). The law directed ODOT to conduct a study of the historic and scenic features of state highways and structures in the right-of-way, to prepare a master plan of state highways that are eligible for designation, and to designate appropriate segments and related structures for the purpose of preservation. The citizen advisory committee that participated in the process subsequently recommended that the transportation commission establish an ongoing program, which was done and remains in effect to date.

The purpose of the designation program is to maintain and preserve state highway features with historic, engineering, recreational, scenic, and tourism significance. ODOT policy has been to designate only the most outstanding examples of these resources. A single designation category – historic and scenic highway – is used for both highway segments and related structures and covers historic and/or scenic values.

As of July 1988, a total of 25 highway routes or features have been designated, for a total of nearly 235 miles. Facilities range from the spectacular 73.8-mile Columbia Gorge Scenic Highway to St. John's Bridge, a historic steel suspension bridge built in 1931 and designed by the famous engineer, David Steinman.

Management of Designated Roads

The rules direct ODOT to provide for rehabilitation, restoration, maintenance, and preservation of those features that have historical, engineering, recreational, scenic, or tourist-related significance. Assurance of special treatment for historic and scenic highways by ODOT is accomplished by incorporation into the ongoing transportation planning process, along with following the requirements of the National Environmental Policy Act and the National Historic Preservation Act as amended. Signs indicating historic or scenic designations are installed.

Designation Process

The 1983 law directed the Oregon Transportation Commission to appoint an eight-member citizen's advisory committee. The advisory committee was responsible for assisting ODOT in preparing the master plan of state highways eligible for scenic designation and for recommending designation of specific segments to the commission. The commission has the actual designation authority.

Guidelines were established to assist in selecting routes for potential inclusion in the master plan. These guidelines state that the highway segment or structure must provide an outstanding view or vista; contain outstanding or unusual historic values that illustrate the development of Oregon; provide for historic or scenic values that promote use of the facility as a destination or preferred route; have historic or scenic values that appear in local or regional travel promotional literature; have unique design, construction, or other significant features connected with a notable designer or architect; or have views or vistas that contain unique examples of landforms, vegetation, or scenic values of the geographic region. The significant historic or scenic values must be recognized by the local population.

Upon completion of the inventory, the committee used the following evaluation criteria to rate each segment: the segment is exceptionally rare and beautiful and/or historically significant (e.g., one of a kind and among Oregon's most extraordinary scenic resources); a determination that the candidate's values are broadly known throughout the state; and a determination of use of the segment/structure as a destination and/or preferred route of the traveling public.

As a result of the initial round of evaluations, the advisory committee recommended 25 sites or segments to the Transportation Commission for designation.

The program that is currently in place allows any individual to propose new designations (or deletions). The criteria are that the proposed segment or structure must be part of the state highway system and must contain historic and/or scenic values with the right-of-way and that the values should be broadly recognized. ODOT staff reviews requests and recommends action to the transportation commission.

VERMONT

Program Coverage

The Vermont State Transportation Board has designated four scenic routes in addition to Route 100. Route 100 was initiated by the state legislature in 1937 to provide a scenic route extending through the central portion of the state from Massachusetts to the Canadian border.

Local roads were not eligible for designation until 1977, when the Vermont legislature enacted a bill "to preserve through planning the scenic quality of (Vermont's) rural landscape." The law directed the Vermont Department of Transportation (VDOT) to publish standards and guidelines for selecting and designating state and town scenic roads, as well as standards for managing them to preserve scenic qualities. Designation of town roads, however, is voluntary, the responsibility for which rests primarily on the local citizens and their officials. Towns have yet to act under this authorization.

The criteria used to evaluate candidates for scenic designation are similar for state and local programs. The following information, however, pertains specifically to the local scenic road program.

Management of Designated Local Roads

Once a local road achieves formal scenic status, subsequent maintenance and reconstruction work must comply with standards established by the transportation board. These standards are designed to preserve scenic quality without reducing the highway's level of safety or service. Private lands are unrestricted by the act.

Town-elected officials are required to discuss proposed changes at a public hearing. Based on input received at the hearing, the local officials weigh the need for the changes against any possible reduction in scenic quality. If the proposal will significantly reduce scenic quality, the local officials should either modify the proposal or remove the scenic designation.

Designation Process

For local roads, the designation process is initiated by the local community. It begins with the evaluation of the entire town road system based on a survey process proposed in "Designating Scenic Roads, A Vermont Field Guide," published by the VDOT for this purpose. The field guide suggests that a volunteer group take the primary responsibility for surveying, evaluating, and recommending to the local elected officials which roads are worthy of scenic designation. The local elected officials have designation authority, and are required to hold a public hearing to review requests.

On a mile-by-mile basis, the criteria used to determine scenic quality include both negative and positive factors, identified in a special form as follows: vegetation, landscape features, road characteristics, waters, buildings (picturesque farmsteads, for example), and other man-made structures. The state recommends that a total of 10 positive factors be the minimum for designation although those with fewer than 10 can be considered.

WISCONSIN

Program Coverage

In 1973 the Wisconsin state legislature established the rustic roads system to be administered by a specially created board, the Rustic Roads Board (Wis. Stat. 84-85, 83.42; Wis. Adm Code Trans-RR101, 1981). The law is intended to help citizens and local units of government preserve what remains of Wisconsin's scenic, lightly traveled country roads for the leisurely enjoyment of bikers, hikers, and motorists.

A total of 24 miles, 50 roads in 30 counties have been designated to date. In addition, Wisconsin participates actively in two cooperative scenic roads efforts. The Great River Road traverses the state for 250 miles (see Minnesota), and the state is working with other states and the Province of Ontario to manage and promote circle tours of Lakes Michigan and Superior.

Management of Designated Roads

The regulations require that maintenance and construction activities be conducted to protect a designated road's rustic qualities. In addition, speed limits are established at 45 miles per hour, although the maintaining authority may petition WDOT for a change. Rustic roads are also signed and numbered accordingly. Although the regulations suggest that adjacent localities implement land use protection programs to preserve rural qualities, there are no requirements or incentives to do so.

Designation Process

The law established the Rustic Road Board, comprised of chairpersons of the state senate assembly standing committees with jurisdiction over transportation matters, and either members appointed by the secretary of WDOT (four of whom are nominated by the county boards association). The board is responsible for overseeing program development, for evaluation of designation requests, and for the actual designating action.

To initiate the designation process, a specified number of local residents submit a petition to the local governing body. The governing body holds a hearing on the petition, and can approve or disapprove the request. The local governing body then requests designation from the board. The board determines whether the road meets the established qualifications and takes action accordingly.

To qualify for rustic road designation, a road must: have outstanding natural features or cultural landscapes (e.g., rustic or agricultural vistas) that singly or in combination make the road unique and distinct; be a year-round, low-volume, local access public road, which generally precludes designating collectors or arterials; not be proposed for major improvement that would change its rustic characteristics; preferably have no high density development along it; preferably be a minimum length of 2 miles and where feasible provide a completed closure or loop or connect to major highways at both ends of the route; and be adjacent to land that is zoned in a compatible manner.

SUMMARY OVERVIEW OF SELECTED STATE SCENIC ROAD PROGRAMS

State	Number of Miles or Segments	Qualities Considered	Management
Arizona	8 segments	Historical/cultural significance Natural scenic beauty	Maintenance/construction requirements Regulation of subdivision siting along parkways Acquisition allowed; no condemnation
California	1,022 miles of state road 47 miles of county road 5,870 miles of state roads are eligible	Natural scenic beauty, with historical component	Locally adopted land use controls and design review authorities Includes monitoring and compliance review
Connecticut	(info not available)	Historic/cultural significance, including cultural landscape Significant natural features One-mile minimum length Compatible adjacent development	Maintenance/construction requirements Advisory committee review
Idaho	7 routes	Unique natural scenic beauty Cultural/historic/scientific attractions that have interpretive centers or tours	Signs to direct tourists to features
Maine	8 segments totaling 183 miles	"Natural scenic beauty	State may acquire land State may establish rest areas and pulloffs Advertising restrictions Some control over utility locations Permit review
Minnesota	18 state and local routes 560 miles of Great River Road In planning stages of program for designation for unique and scenic highways	Natural scenic beauty Historic or cultural landscape 1-1/2 mile minimum length Access to major regional attractions Statewide or national significance	Maintenance/construction requirements Overlooks and pulloffs Purchase of scenic easements Other development to enhance recreation No additional funds provided, so opportunities are addressed in agency or transportation planning process
Ohio	Approximately 40 routes to date Participate in Great Lakes Circle Tour program	Natural scenic beauty Cultural/historic landscape Diversity of scenic areas Linkage and opportunities for sight-seeing Rural state roads that pass through or connect scenic, historic, or recreational areas	Maintenance/construction requirements Turnouts can be provided Noted on state map

State	Number of Miles or Segments	Qualities Considered	Management
Oregon	25 routes or features totaling nearly 235 miles	Natural scenic beauty Historic/cultural significance Architectural/engineering feature Must be unique, high quality, or outstanding examples	Through transportation planning process Law provides for rehabilitation, restoration, maintenance, and preservation of features
Vermont	5 state routes	Natural scenic beauty Cultural/historic landscapes and features	Maintenance/construction must comply with state-established standards Elected officials hold public hearings on proposed changes and can remove designation
Wisconsin	50 local roads in 30 counties totaling 24 miles 250 miles of Great River Road Participates in Great Lakes Circle Tour	Outstanding natural features and cultural landscapes Year-round low-volume local access road No planned major construction Preferred minimum 2-mile length Preferred loop road or connector to highways Compatible adjacent land use and zoning Applies to rural and rustic roads only	Maintenance/construction requirements 45 mph speed limit

APPENDIX B: ADDITIONAL CRITERIA FOR SCENIC ROADS AND BYWAYS

The following "suggested" scenic road and byway criteria have also been identified by the Federal Highway Administration:

Quality is deserving of local, state, or national recognition of existing or potential scenic, recreational, historic, educational, scientific, or cultural features

A destination, in and of itself; complementary roadside facilities should exist or be developed adjacent to the road.

Variety of experiences provided for persons using the road and complementary facilities - variety of changes in the landscape, land-use activity, or terrain. The experiences offered in one corridor should differ from that in other parts of the locality, state, or region.

Represent the natural or cultural landscapes peculiar to the area.

Visual or physical accessibility of scenic features and other facilities to highway travelers.

Proximity to population centers.

Safety and design consistent with the scenic corridor – the road should seek an alignment that "fits" with the landscape. The corridor should safely accommodate the anticipated traffic volumes.

Adaptability for future public use and development.

Compatibility with recreational, aesthetic, and conservation needs of the area and with competing highway transportation needs.

Availability of resources with which to sign, upgrade, develop, and otherwise make the scenic road or byway and its corridor available for its intended users.

Accessibility that provides connecting links between existing or proposed recreation areas and parks, or points of historical, cultural, scientific, or scenic interest.

Location and geographic distribution over as wide a geographic area as is possible. A corridor may provide a loop parallel to a major arterial route, allowing the traveler to leave the arterial route and later return to it.

Competing uses that do not create unsafe conditions or distract from the scenic values. Ideally, users of the scenic road should not interfere with each other.

Public and private development that is adaptable and consistent with the character of the scenic corridor. Obtrusive or offensive uses should be restricted, eliminated, modified, bypassed, or screened from view.

(Adapted from Scenic Byways, U.S. Department of Transportation, Federal Highway Administration, Publication No.: FHWA-DF-88-004, July 1988)

As the above list of criteria indicate, there are many ways to consider scenic roads and byways. Several states have scenic road identification and designation programs. Some states have definitions and criteria for the designation of scenic roads, and other states have no criteria. Where criteria are identified, they may include reference to high quality natural scenery and historic sites, or the criteria may require local identification and nomination. There is a great deal of latitude in the manner in which states have approached the scenic road and byway issue (see appendix A).

In addition to the various approaches to identifying and designating scenic roads, there are also various approaches to managing scenic roads. In some states scenic roads are managed and

maintained in the same way that all roads in the state are managed. In other states there may be different management and maintenance practices. For example, states may require that any state funds for projects affecting the road must be reviewed by a scenic road advisory board. Maintenance activities on designated scenic roads may require review by a statewide scenic road advisory board. Some states encourage local municipalities to adopt land use regulations that would maintain the views from scenic roads. In other cases, land acquisition programs could be adopted to ensure the quality of views from scenic roads.

APPENDIX C: RELATED PROJECTS

FHWA/NPS Lake/Porter County Line Road Bridge

This joint FHWA/NPS project will replace the existing Indiana Harbor Belt bridge on Lake/Porter County Line Road, redesign the entrance and exit roads to West Beach, and redesign the intersections of the access roads and the County Line Road.

Porter/LaPorte County Line Road Improvements and US 12 Realignment

This project consists of two elements: (1) the development of an East Unit access road, a four-lane rural arterial highway, beginning on the south at a new interchange on I-94 and generally continuing along the LaPorte/Porter county line north to US 12, and (2) the development of a new four-lane arterial highway for the relocation of US 12 beginning at the LaPorte/Porter county line and Woodlawn Avenue on the west and continuing east and north approximately 1.2 miles to the intersection of existing US 12 near Sheridan Avenue in Michigan City. The *Final Environmental Impact Statement* for this project was issued in August 1989.

I-94 Interchange at Porter/LaPorte County Line Road

A new interchange would be constructed at the intersection of I-94 and the Porter/LaPorte county line that would provide access to the national lakeshore's East Unit and the west side of Michigan City.

IN 49 Widening between US 20 and 12

This is the only segment of IN 49 in northern Porter County that is currently two lanes. Widening this segment would facilitate access to Indiana Dunes State Park and improve safety on IN 49.

IN 49 and US 20 Interchange Redesign

This intersection is an outdated cloverleaf. Improvements will include replacing the two-lane overpass with a four-lane overpass and redesigning the ramps to better accommodate higher-speed vehicles and large trucks.

Port of Indiana Bridge at IN 249 and US 12

This two-lane bridge was constructed by the Port of Indiana to provide access to the port. A second structure has been proposed to allow two travel lanes in each direction.

IN 51 Widening between I-94 and US 20

This two-lane segment has been proposed to be widened to four lanes with turning lanes at each of the intersections. As part of this project, the intersection of Old Hobart Road and IN 51 would be relocated and redesigned to improve safety and traffic flow.

15th Street Extension in Lake Station

The city of Lake Station has proposed to extend 15th Street from the current intersection of 15th and Lake streets to IN 51 and Old Hobart Road by way of the northern boundary of the Calumet Prairie and the gas pipeline just south of I-94.

Lake Michigan Circle Tour

The Lake Michigan Circle Tour is a 1,100-mile motor-tour route that circles Lake Michigan. The tour is a cooperative initiative that is supported by the tourism industry and agencies in the four states that surround the lake. The tour route follows established trunk highways that are close to the lake. See tourism subheading in the "Regional Context and Existing US 12 Corridor" section for more information about the Circle Tour.

East Unit Transit Center

The East Unit Transit Center was recommended as part of the *General Management Plan* for Indiana Dunes National Lakeshore to provide visitors with shuttle bus services from a satellite location to the various lakeshore beaches. The East Unit Transit Center will be on an 65-acre site near the northeast corner of the intersection of Porter/LaPorte County Line Road and US 12 and accommodate parking for 800 vehicles.

East Unit Campground

An NPS-owned and operated campground is currently being designed for a 182-acre site between US 12 and US 20, south of the Broadway Avenue and US 12 intersection. The campground is being designed for 170 sites, including a group camping area and provision for conventional, recreational, and walk-in sites. Construction of the first phase of the campground, about 80 sites, is expected to begin in the fall of 1990.

APPENDIX D: INDIANA DUNES NATIONAL LAKESHORE VISITATION

ANNUAL RECREATION VISITATION 1981-1988

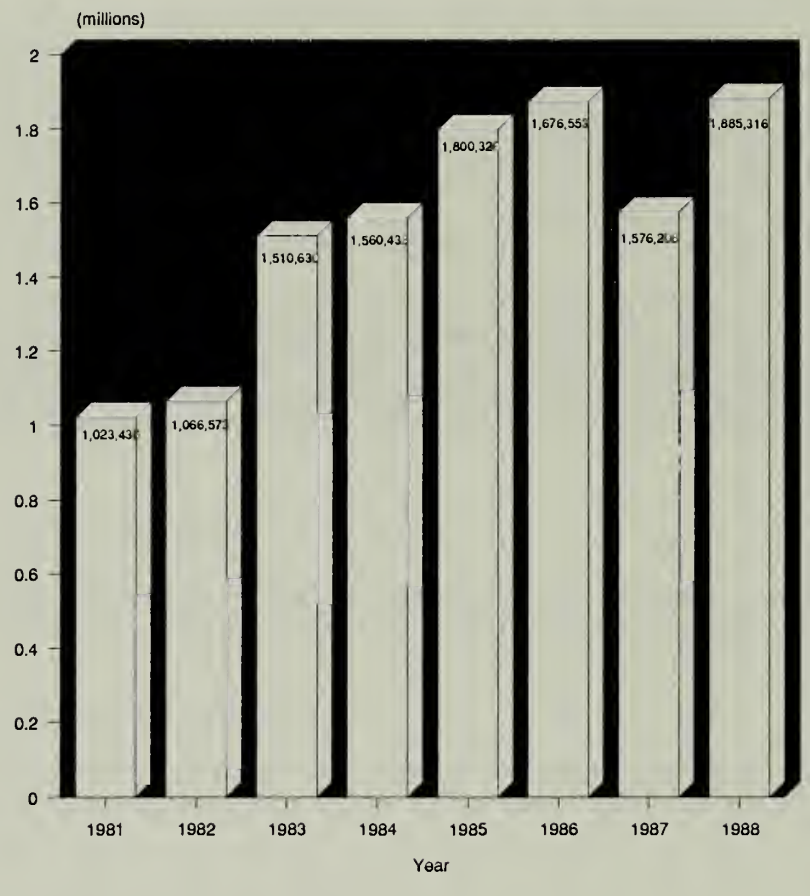


Figure 1

MONTHLY DISTRIBUTION OF USE
BY PERCENT, 1981-1988

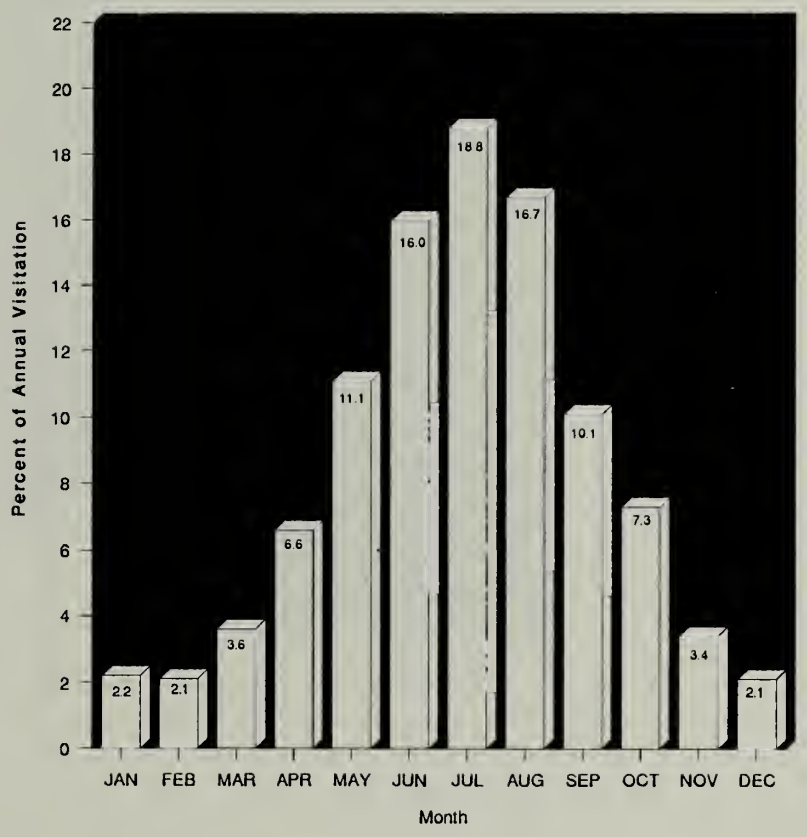


Figure 2

PARK VISITATION BY UNIT - 1988

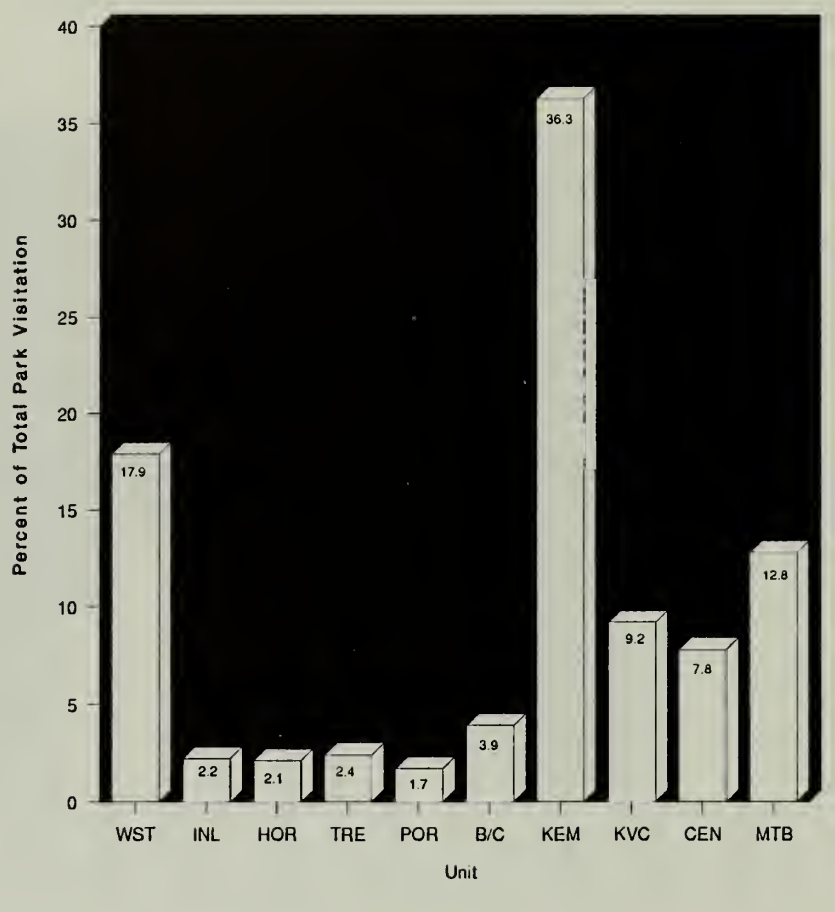


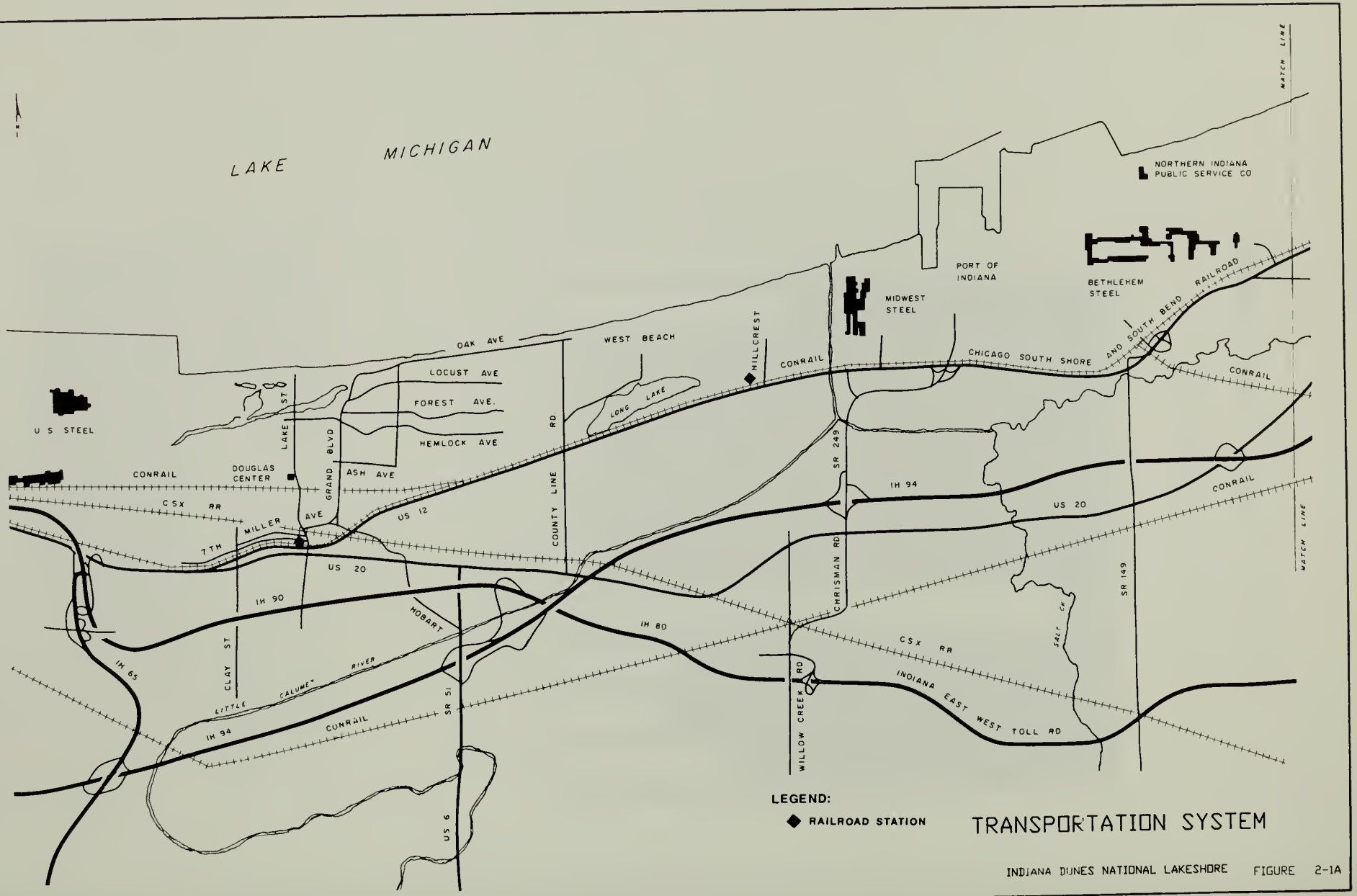
Figure 3

Key:

B/C = Bailly/Chellberg area
CEN = Central Avenue Beach
HOR = Horse/ski trail lot
INL = Inland Marsh
KEM = Kemil beaches
KVC = Kemil visitor center
MTB = Mt. Baldy
POR = Porter Beach lot
TRE = Tremont parking lot
WST = West Beach

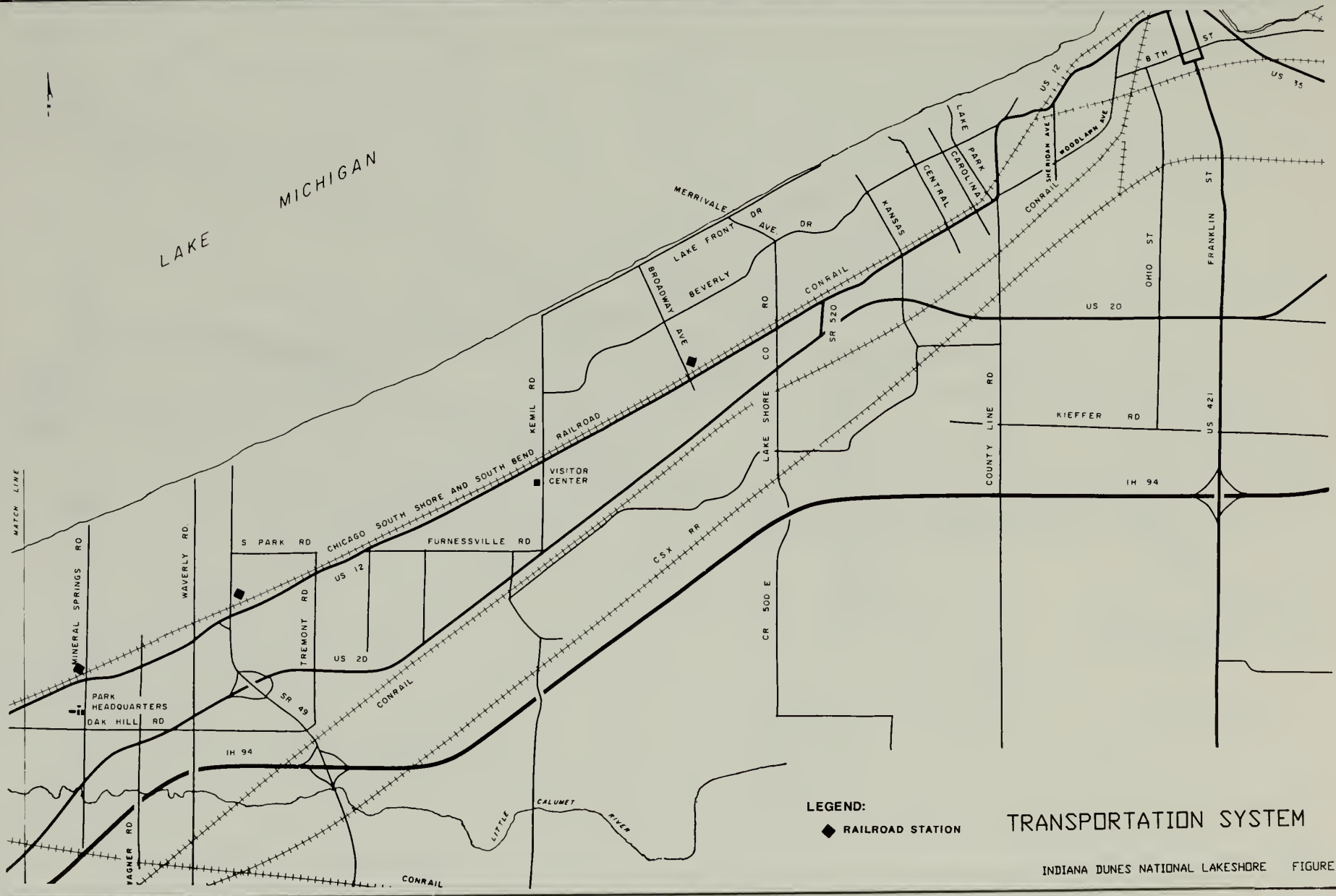
Note: Visitation to the Kemil Road beaches is determined by adding data from the Kemil Beach parking lot, the Lake View parking lot, and a traffic counter along Lake Front Drive. Thus, the level of use shown for this area may not be truly indicative of its actual relative use. Non-site-specific sources make up 3.7 percent of annual use.

APPENDIX E: TRANSPORTATION CONDITIONS



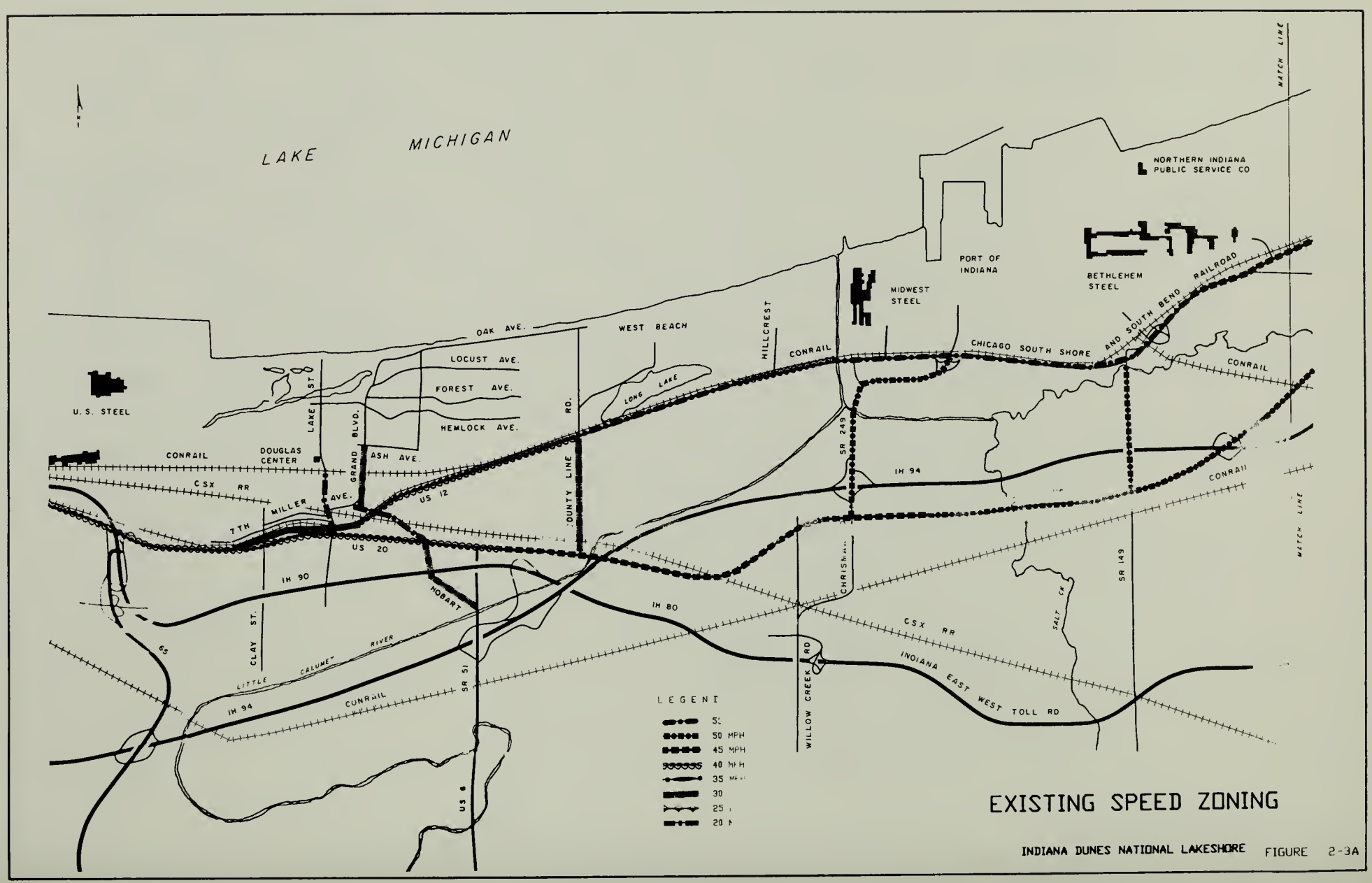
TRANSPORTATION SYSTEM

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-1A



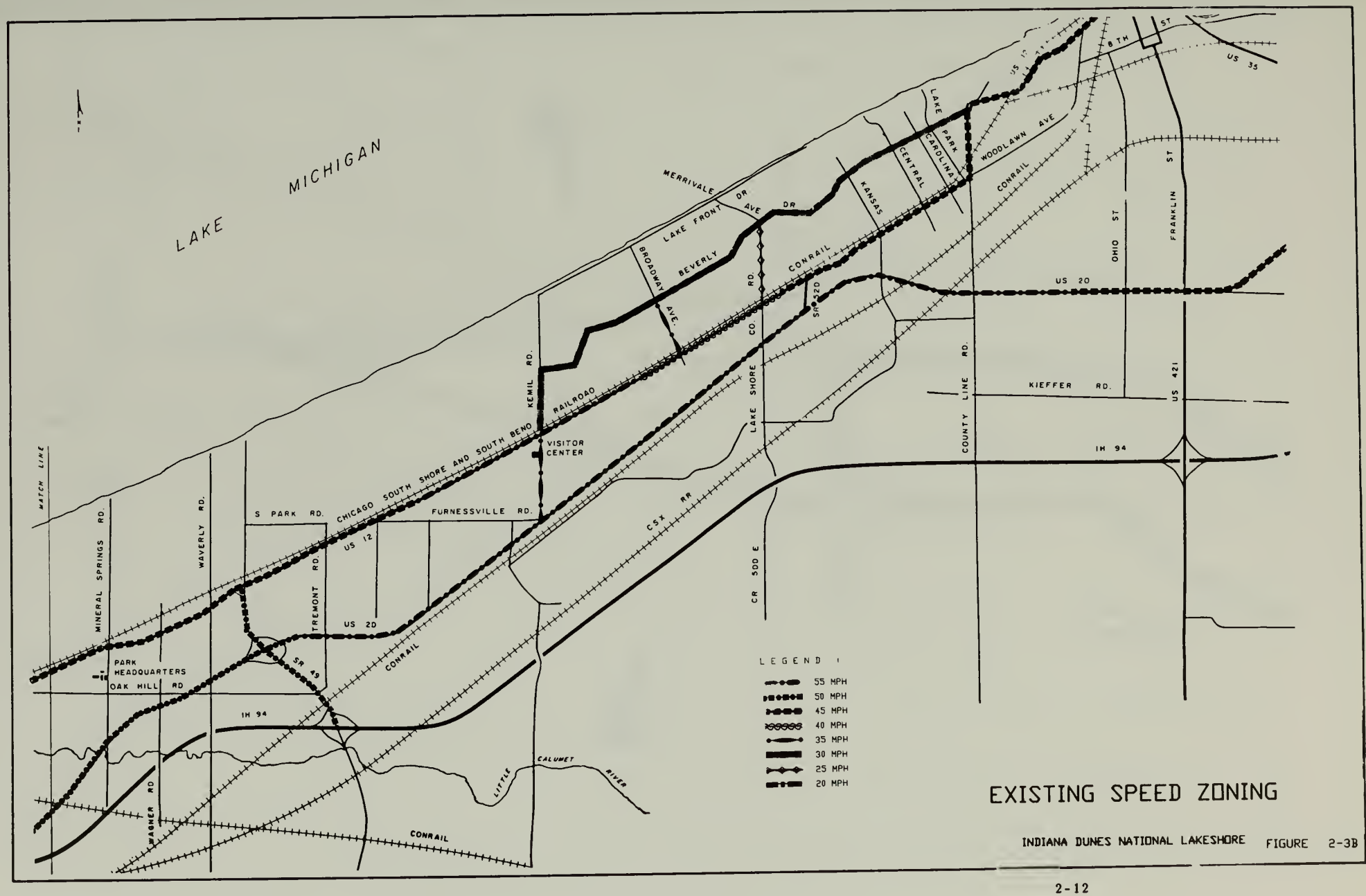
TRANSPORTATION SYSTEM

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-1B



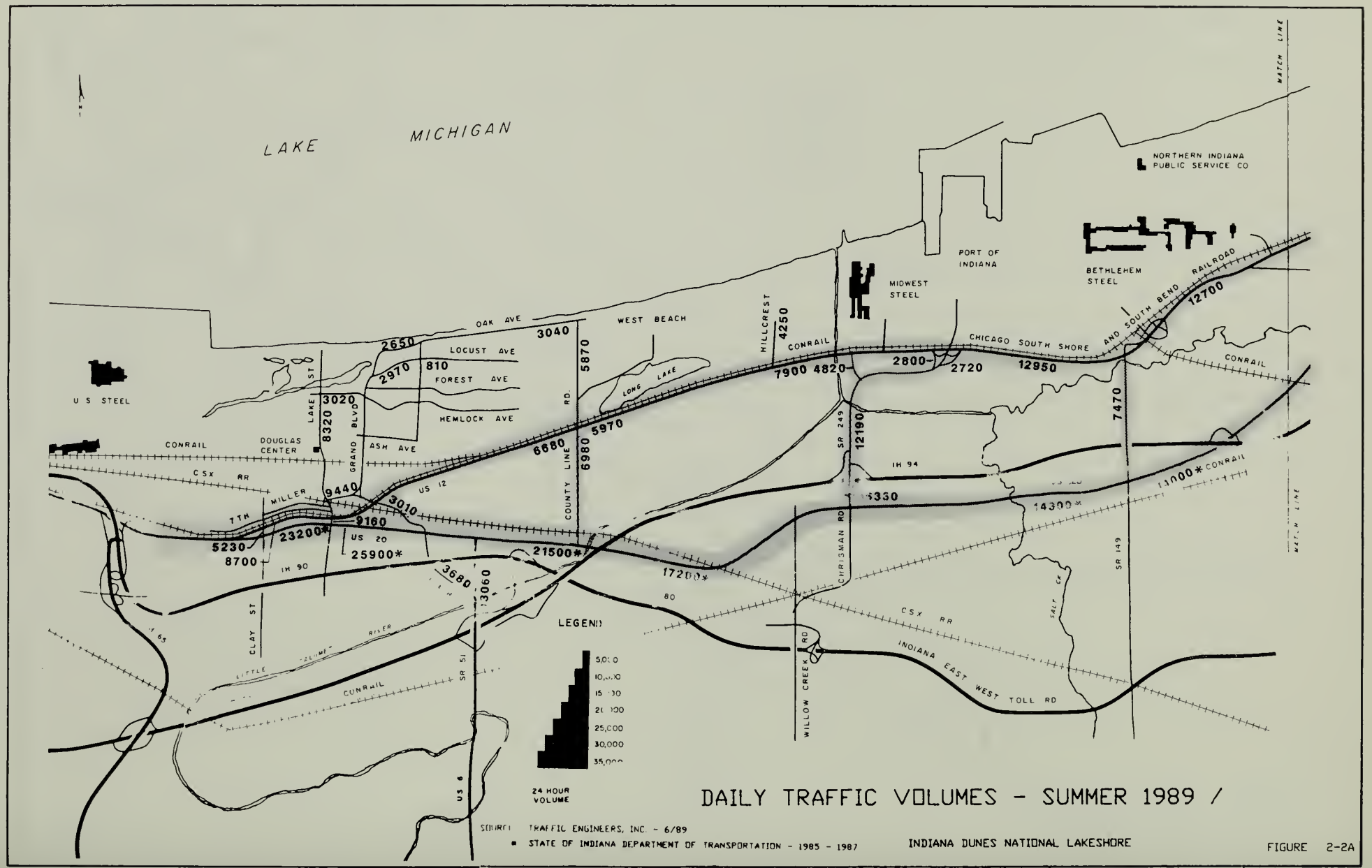
EXISTING SPEED ZONING

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-3A



EXISTING SPEED ZONING

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-3B

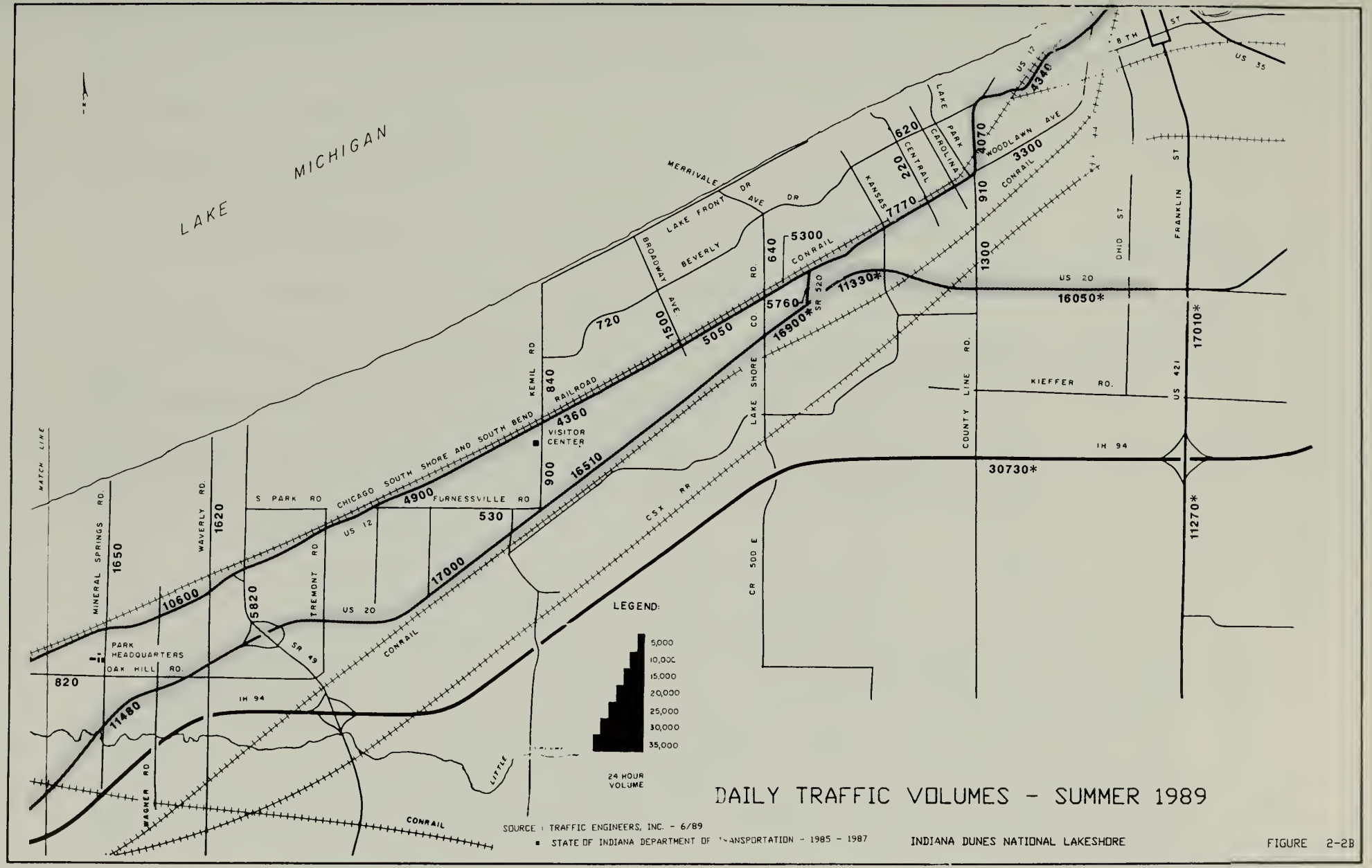


DAILY TRAFFIC VOLUMES - SUMMER 1989 /

SOURCE: TRAFFIC ENGINEERS, INC. - 6/89
■ STATE OF INDIANA DEPARTMENT OF TRANSPORTATION - 1985 - 1987

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 2-2A



DAILY TRAFFIC VOLUMES - SUMMER 1989

SOURCE: TRAFFIC ENGINEERS, INC. - 6/89
STATE OF INDIANA DEPARTMENT OF TRANSPORTATION - 1985 - 1987

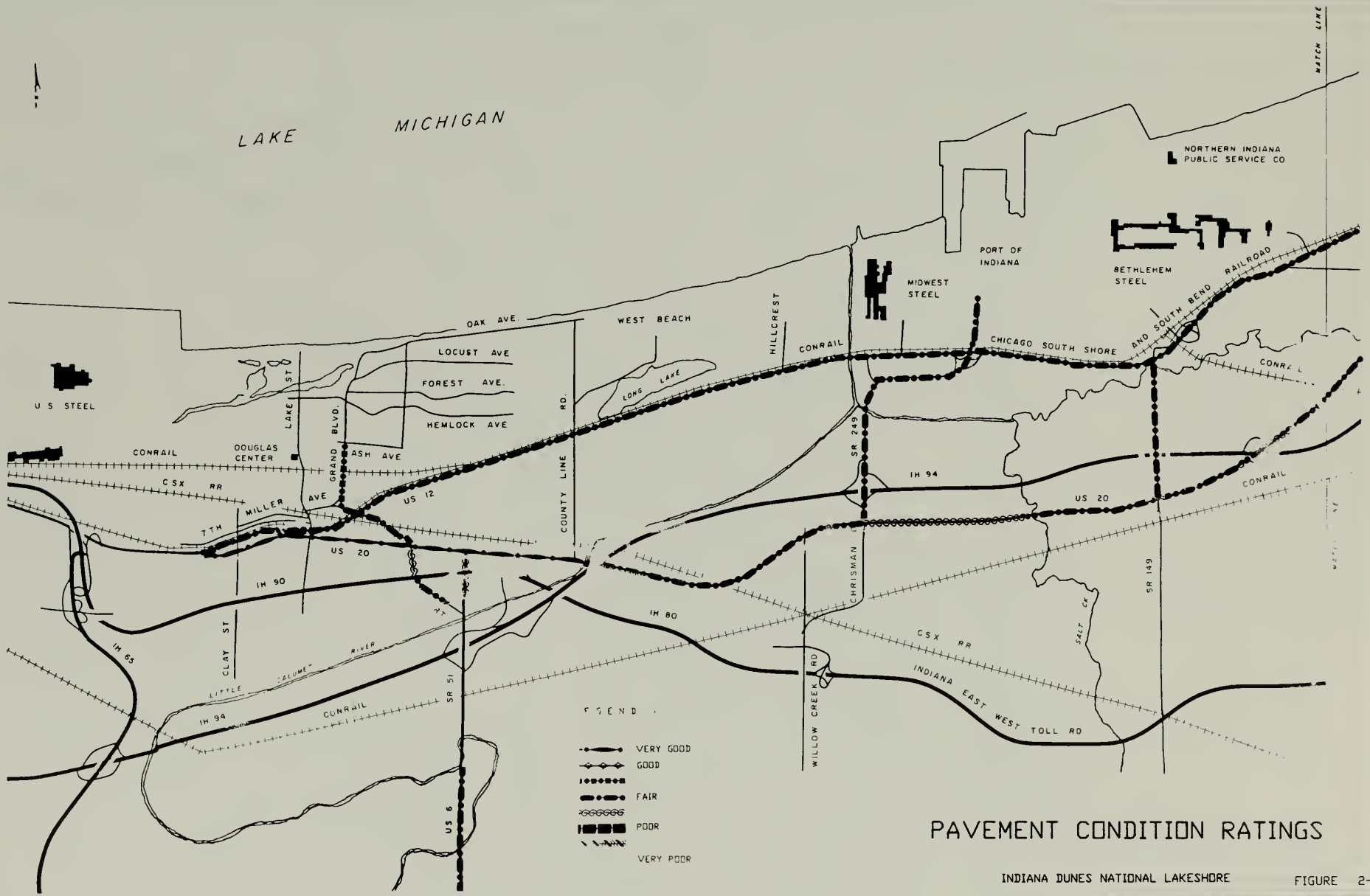
INDIANA DUNES NATIONAL LAKESHORE

FIGURE 2-2B

TABLE A-1

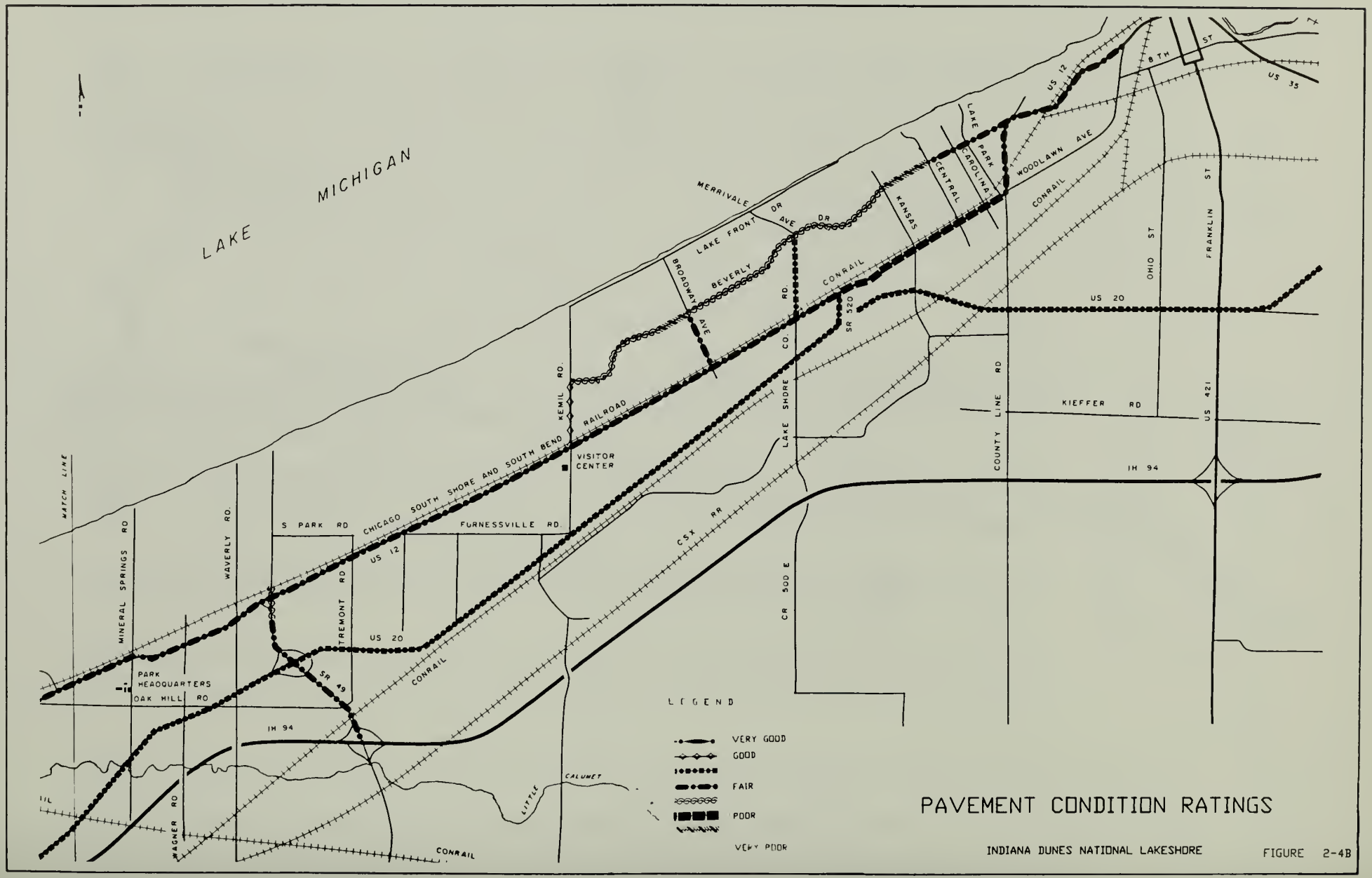
TRAFFIC COUNT SUMMARY

STATION ID	STATION LOCATION	DATE TAKEN	24 HOUR VOLUME	TRUCK %	ADJUSTED 24 HOUR VOLUME	SEASONAL FACTOR	ANNUAL FACTOR	SEASONAL ADT	ANNUAL ADT	REFERENCE STATION
39011	COUNTY LINE RD (W) NORTH OF US 12							5068	4836	
39012	US 12 EAST OF COUNTY LINE RD (W)							3701	3564	
39013	COUNTY LINE RD (W) SOUTH OF US 12							4510	4277	
39014	US 12 WEST OF COUNTY LINE RD (W)			Not Applicable				4448	4333	
39021	US 12 EAST OF MINERAL SPRINGS RD.			Continuous Count Stations				6518	6287	
39031	KEMIL RD NORTH OF FURNESSVILLE RD							737	687	
39032	FURNESSVILLE RD WEST OF KEMIL RD							439	420	
39041	US 12 EAST OF KEMIL RD							3396	3246	
3911	KIOSK ENTRANCE-OFF OF COUNTY LINE RD (W)	06/22/89	2248	N/A	2248	0.84	0.73	1888	1641	39011
3912	HADENFELT RD BETWEEN FURNESSVILLE RD & US 20	08/24/88	104	N/A	104	0.91	0.97	95	101	39032
3913	VEDEN RD BETWEEN FURNESSVILLE RD & US 20	09/01/88	119	N/A	119	0.90	0.98	107	117	39032
3914	SCHOOLHOUSE RD BTWN FURNESSVILLE RD & US 20	08/30/88	252	N/A	252	0.91	0.97	229	244	39032
3915	BEVERLY DR EAST OF CENTRAL AVE	08/22/88	621	N/A	621	0.94	0.88	584	546	39031
3916	CENTRAL AVE BETWEEN BEVERLY DR & US 12	08/24/88	172	N/A	172	0.94	0.88	162	151	39031
3917	US 12 WEST OF CENTRAL AVE	08/22/88	7774	N/A	7774	0.86	0.82	6686	6375	39041
3918	BEVERLY DR WEST OF CENTRAL AVE	08/22/88	440	N/A	440	0.94	0.88	414	387	39031
3919	BROADWAY AVE BETWEEN BEVERLY DR & US 12	08/22/88	1504	N/A	1504	0.94	0.88	1414	1324	39031
3920	BEVERLY DR BETWEEN BROADWAY AVE & KEMIL RD	08/22/88	196	N/A	196	0.94	0.88	184	172	39031
3921	BEVERLY DR BETWEEN BROADWAY AVE & US 12	08/24/88	718	N/A	718	0.94	0.88	675	632	39031
3922	US 12 W OF BEVERLY DR AT RAILROAD	06/21/89	4259	9	4074	0.89	0.85	3626	3463	39041
3923	WOODLAWN AVE E OF COUNTY LINE RD (EAST)	06/11/89	3345	2	3313	0.89	0.85	2948	2816	39041
3924	COUNTY LINE RD (E) S OF WOODLAWN AVE	06/11/89	914	N/A	914	0.92	0.79	841	722	39013
3925	COUNTY LINE RD (E) AT RAILROAD N OF US 20	06/21/89	1298	N/A	1298	0.92	0.79	1194	1025	39013
3926	CENTRAL AVE AT RAILROAD N OF US 12	06/21/89	224	N/A	224	0.95	0.82	213	184	39031
3927	US 20 E OF SR 520	06/22/89	11966	11	11330	0.89	0.85	10084	9631	39041
3928	SR 520 BETWEEN US 12 & US 20	06/14/89	5905	5	5762	0.89	0.85	5129	4898	39041
3929	LAKE SHORE COUNTY RD N OF RAILROAD/US 12	06/21/89	638	N/A	638	0.95	0.82	606	523	39031
3930	KEMIL RD AT RAILROAD N OF US 12	06/21/89	839	N/A	839	0.95	0.82	797	688	39031
3931	US 20 AT KEMIL RD	06/22/89	17348	10	16510	0.89	0.85	14694	14034	39041
3932	TREMONT RD AT RAILROAD N OF US 12	06/21/89	179	N/A	179	0.95	0.82	170	147	39031
3933	SR 49 S OF US 12	06/11/89	5931	4	5816	0.92	0.79	5351	4595	39013
3934	BROADWAY AT RAILROAD N OF US 12	06/21/89	1547	N/A	1547	0.95	0.82	1470	1269	39031
3935	WAVERLY RD AT RAILROAD N OF US 12	06/21/89	1619	N/A	1619	0.95	0.82	1538	1328	39031
3936	US 20 AT MINERAL SPRINGS RD	06/14/89	12119	11	11475	0.83	0.87	9524	9983	39021
3937	MINERAL SPRINGS RD N OF US 20, SB	06/14/89	578	N/A	578	0.95	0.82	549	474	39031
3938	MINERAL SPRINGS RD S OF US 20, NB	06/14/89	371	N/A	371	0.95	0.82	352	304	39031
3939	MINERAL SPRINGS RD N OF RAILROAD/US 12	06/22/89	1654	N/A	1654	0.95	0.82	1571	1356	39031
3940	OAK HILL RD SE OF US 12	06/15/89	821	N/A	821	0.85	0.89	698	731	39032
3941	SR 149 S OF US 12	06/11/89	7890	11	7471	0.92	0.79	6873	5902	39013
3942	SR 249 S OF US 12 (WEST SIDE)	06/13/89	3939	60	2797	0.92	0.79	2574	2210	39013
3943	SR 249 S OF US 12 (EAST SIDE)	06/12/89	3145	28	2720	0.92	0.79	2502	2149	39013
3944	SR 249 CONNECTOR S OF US 12	06/13/89	4817	10	4587	0.92	0.79	4220	3624	39013
3945	SR 249 S OF US 12 CONNECTOR	06/13/89	12189	8	11719	0.92	0.79	10781	9258	39013
3946	HILLCREST (OGDEN DUNES) AT RAILROAD/US 12	06/21/89	4253	N/A	4253	0.95	0.82	4040	3487	39031
3947	SR 249 N OF US 20	06/13/89	16329	8	15699	0.92	0.79	14443	12402	39013
3948	COUNTY LINE RD (W) N OF WEST BEACH	06/19/89	5926	2	5869	0.84	0.73	4930	4284	39011
3949	OAK ST W OF COUNTY LINE RD (WEST BEACH)	06/19/89	3040	N/A	3040	0.84	0.73	2554	2219	39011
3950	OAK STREET E OF MONTGOMERY	06/18/89	2651	N/A	2651	0.84	0.73	2227	1935	39011
3951	LOCUST AVE E OF MONTGOMERY, WB	06/18/89	807	N/A	807	0.84	0.73	678	589	39011
3952	LOCUST AVE W OF MONTGOMERY, EB	06/18/89	2969	N/A	2969	0.84	0.73	2494	2167	39011
3953	MONTGOMERY ST S OF LOCUST AVE	06/18/89	622	N/A	622	0.84	0.73	522	454	39011
3954	GRAND BLVD N OF LOCUST, SB	06/18/89	2477	N/A	2477	0.84	0.73	2081	1808	39011
3955	HEMLOCK AVE W OF GRAND BLVD	06/18/89	3022	N/A	3022	0.84	0.73	2538	2206	39011
3956	LAKE ST AT DOUGLAS CENTER	06/19/89	8316	N/A	8316	0.84	0.73	6985	6071	39011
3957	LAKE ST BETWEEN US 12 AND US 20	06/14/89	9292	3	9157	0.84	0.73	7692	6685	39011
3958	MILLER AVE S OF HOBART RD	06/19/89	9439	N/A	9439	0.84	0.73	7929	6890	39011
3959	US 12 AT CLAY ST	06/14/89	9048	8	8698	0.89	0.90	7742	7829	39014
3960	CLAY ST AT US 12	06/14/89	5257	1	5232	0.84	0.73	4395	3819	39011
3961	HOBART RD N OF US 20	06/15/89	3055	3	3011	0.84	0.73	2529	2198	39011
3962	HOBART RD S OF US 20	06/15/89	3693	1	3675	0.84	0.73	3087	2683	39011
3963	SR 51 S OF US 20	06/15/89	14455	20	13059	0.84	0.73	10969	9533	39011



PAVEMENT CONDITION RATINGS

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-4A



PAVEMENT CONDITION RATINGS

INDIANA DUNES NATIONAL LAKESHORE FIGURE 2-4B

TABLE 2-3

PAVEMENT CONDITION RATING

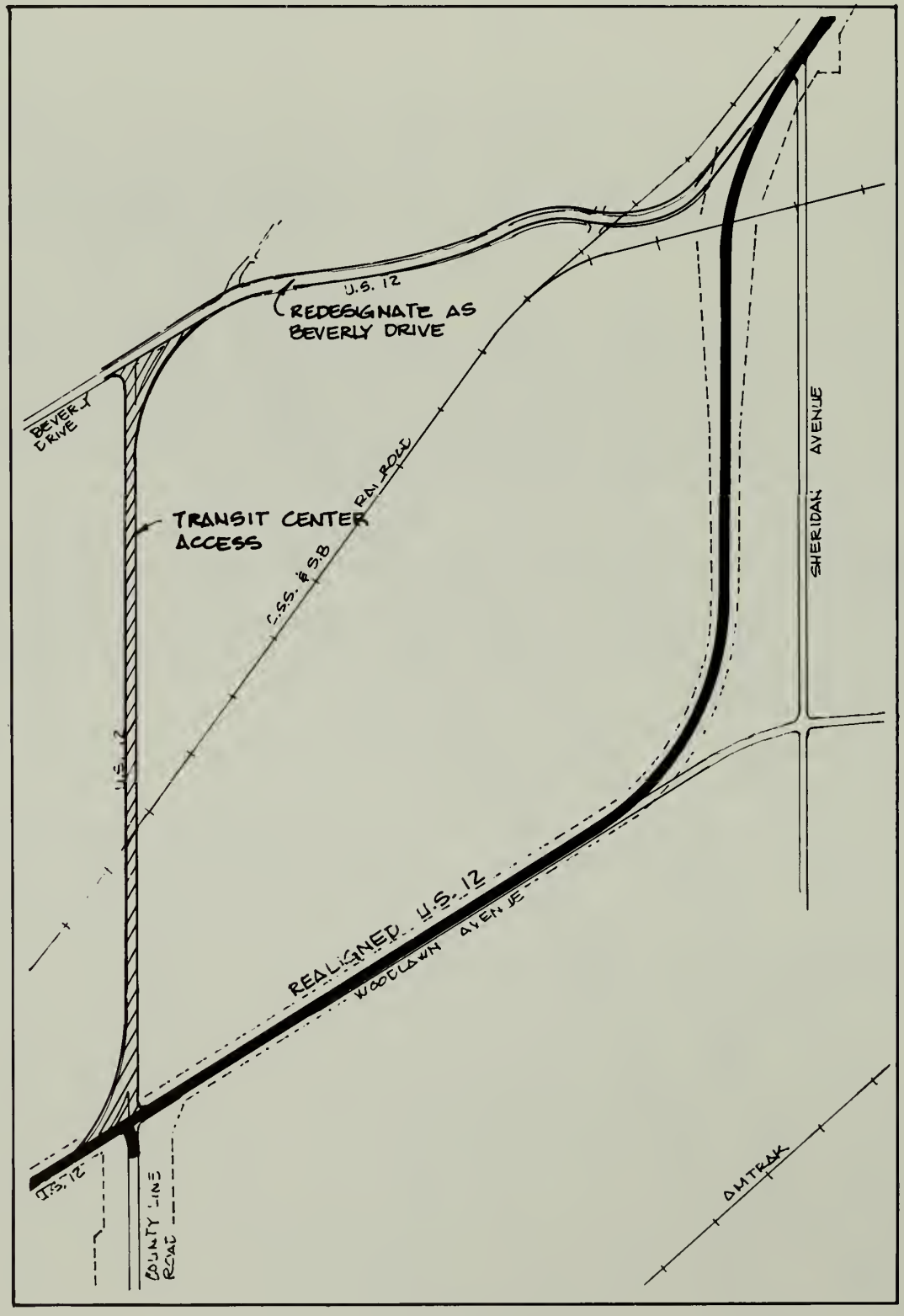
Description
Very Good - Only new (or nearly new) pavements are likely to be smooth enough and sufficiently free of cracks and patches to qualify for this category. All pavements constructed or resurfaced during the data year would normally be rated very good
Good - Pavements in this category, although not quite as smooth as those described above, give a first class ride and exhibit few, if any, visible signs of surface deterioration. Flexible pavements may be beginning to show evidence of rutting and fine random cracks. Rigid pavements may be beginning to show evidence of slight surface deterioration, such as minor cracks and spalling
Fair - The riding qualities of pavements in this category are noticeably inferior to those of new pavements, and may be barely tolerable for high speed traffic. Surface defects of flexible pavements may include rutting, map cracking, and more or less extensive patching. Rigid pavements in this group may have a few joint failures, faulting and cracking, and some pumping
Poor - Pavements that have deteriorated to such an extent that they are in need of resurfacing
Very Poor - Pavements that are in an extremely deteriorated condition and may even need complete reconstruction

5

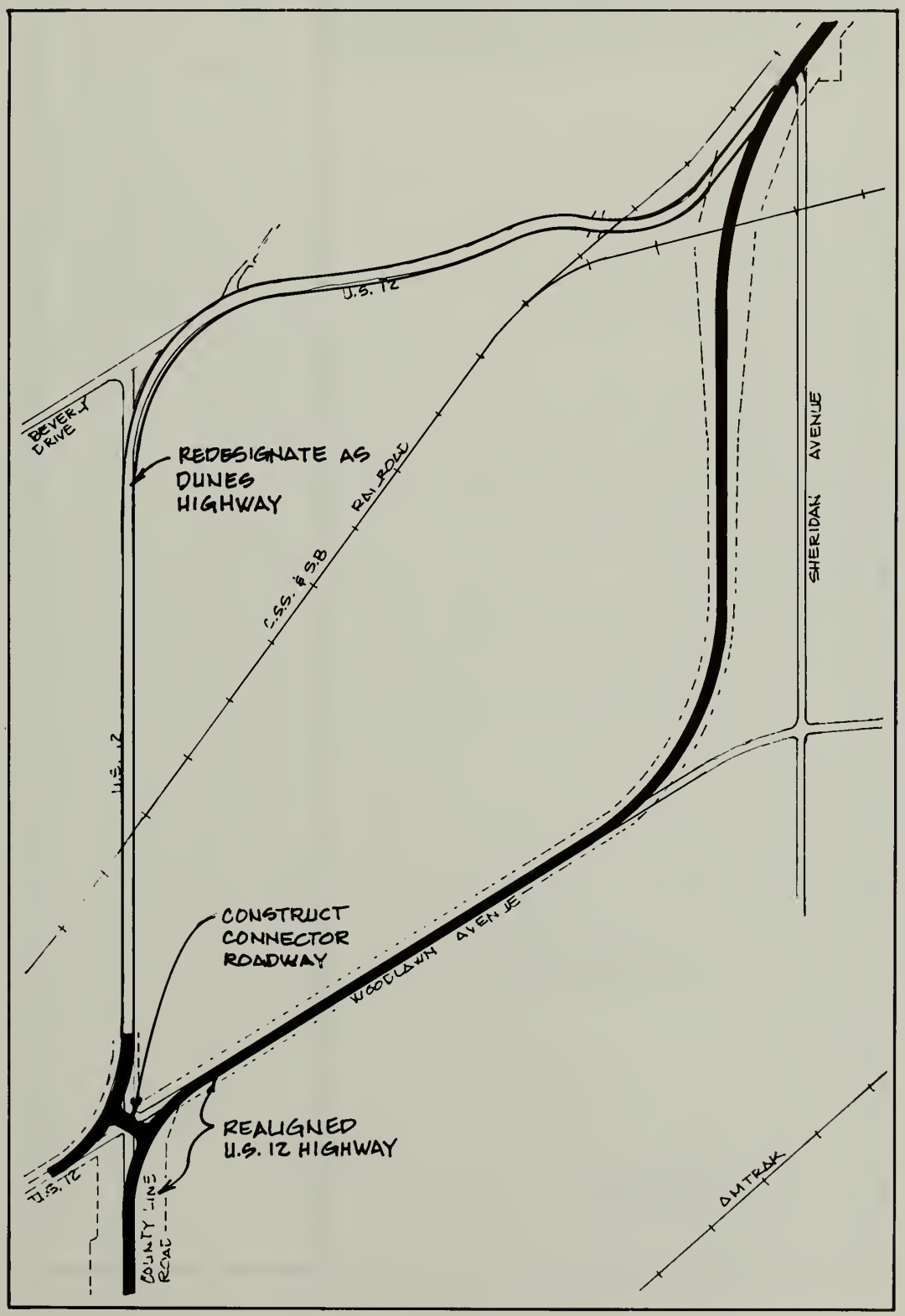
Source: Road Inventory User's Guide

APPENDIX F: RECOMMENDED IMPROVEMENTS TO US 12 REALIGNMENT, ALL ALTERNATIVES

Alternative 1, Recommended Improvements, US 12 Realignment at LaPorte/Porter County Line Road



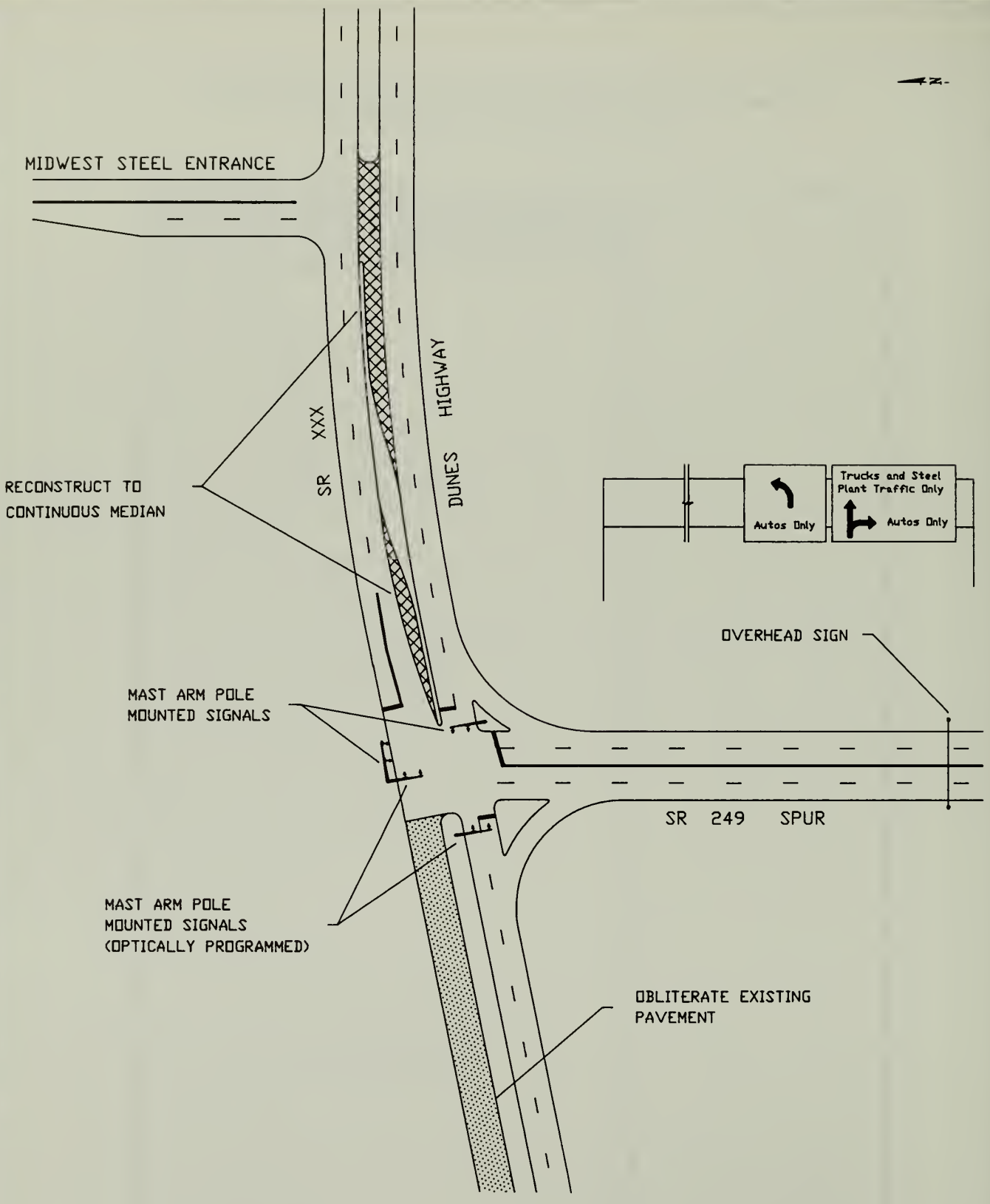
Alternatives 2 & 3, Recommended Improvements, US 12 Realignment at LaPorte/Porter County Line Road



APPENDIX G: SCENIC ROAD INTERSECTION IMPROVEMENTS BY ALTERNATIVE

INTERSECTION IMPROVEMENTS	ALT 1	ALT 2	ALT 3
US 12 & IN 49	*	*	*
US 12 & Furnessville Road	*	*	*
US 12 & Kemil Road	*	*	*
US 12 & Broadway Avenue	*	*	*
US 12 & Lakeshore County Road	*	*	*
US 12 & IN 520	*	*	*
US 12 & Beverly Drive	*	*	*
Beverly Drive & Lakeshore County Road	*		*
Beverly Drive & Broadway Avenue	*		*
US 12 & Lake Street		*	*
US 12 & Lake Porter County Line Road		*	*
US 12 & National Steel Entrance		*	
US 12 & IN 249	*	*	*
US 12 & IN 149	*	*	*
US 12 & Oak Hill Road		*	
US 12 & Bethlehem Steel Main Gate		*	
US 12 & Bethlehem Steel East Gate		*	*
US 20 & IN 520		*	*
US 12 & US 20			*
US 12 & Clay Street			*
Beverly Drive & Kemil Road			*
US 20 & IN 520			*

APPENDIX H: RECOMMENDED IMPROVEMENTS FOR SELECTED INTERSECTIONS IN ALTERNATIVE 2



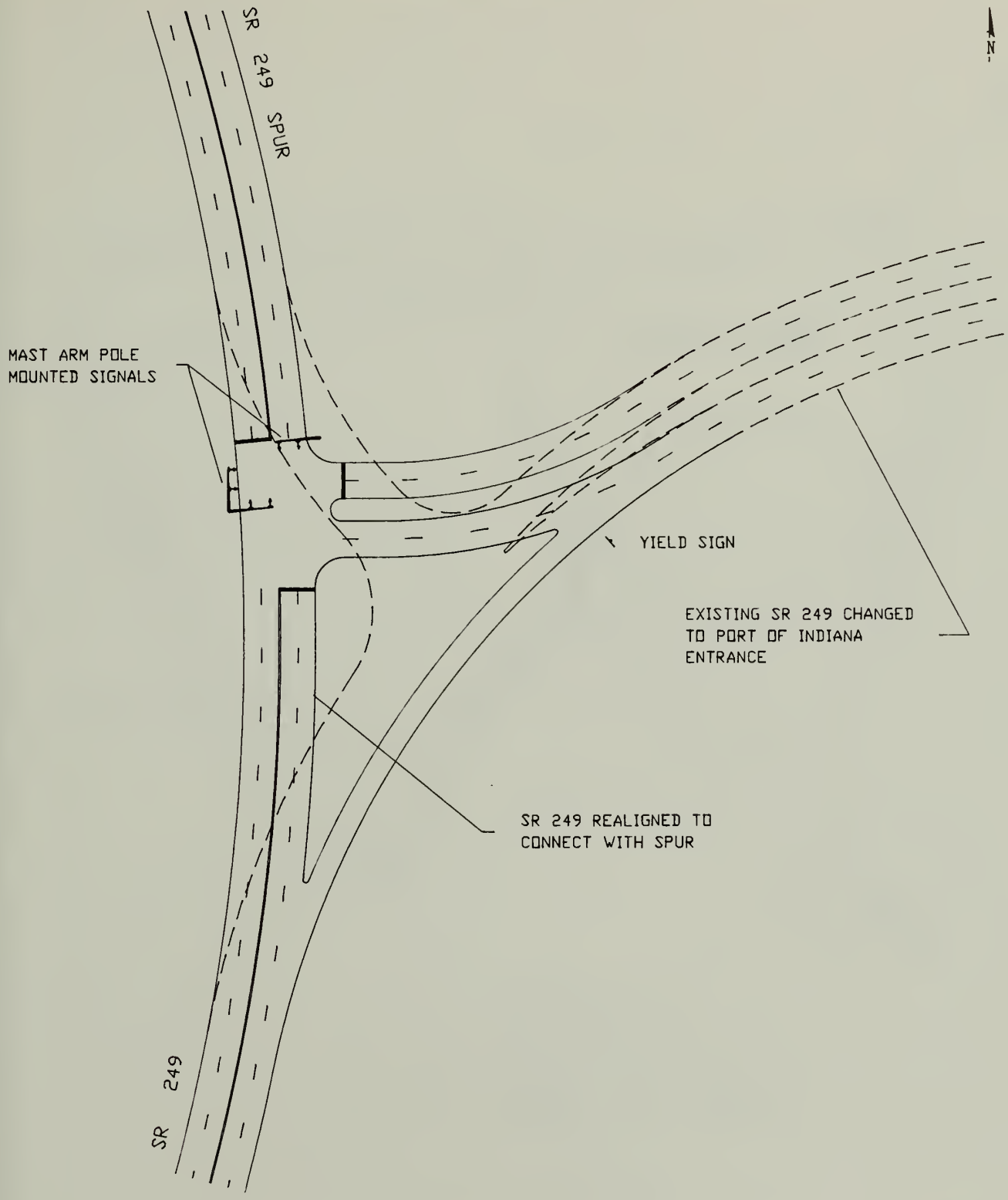
RECOMMENDED IMPROVEMENTS

SR 249 SPUR AT SR XXX / DUNES HIGHWAY

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-18



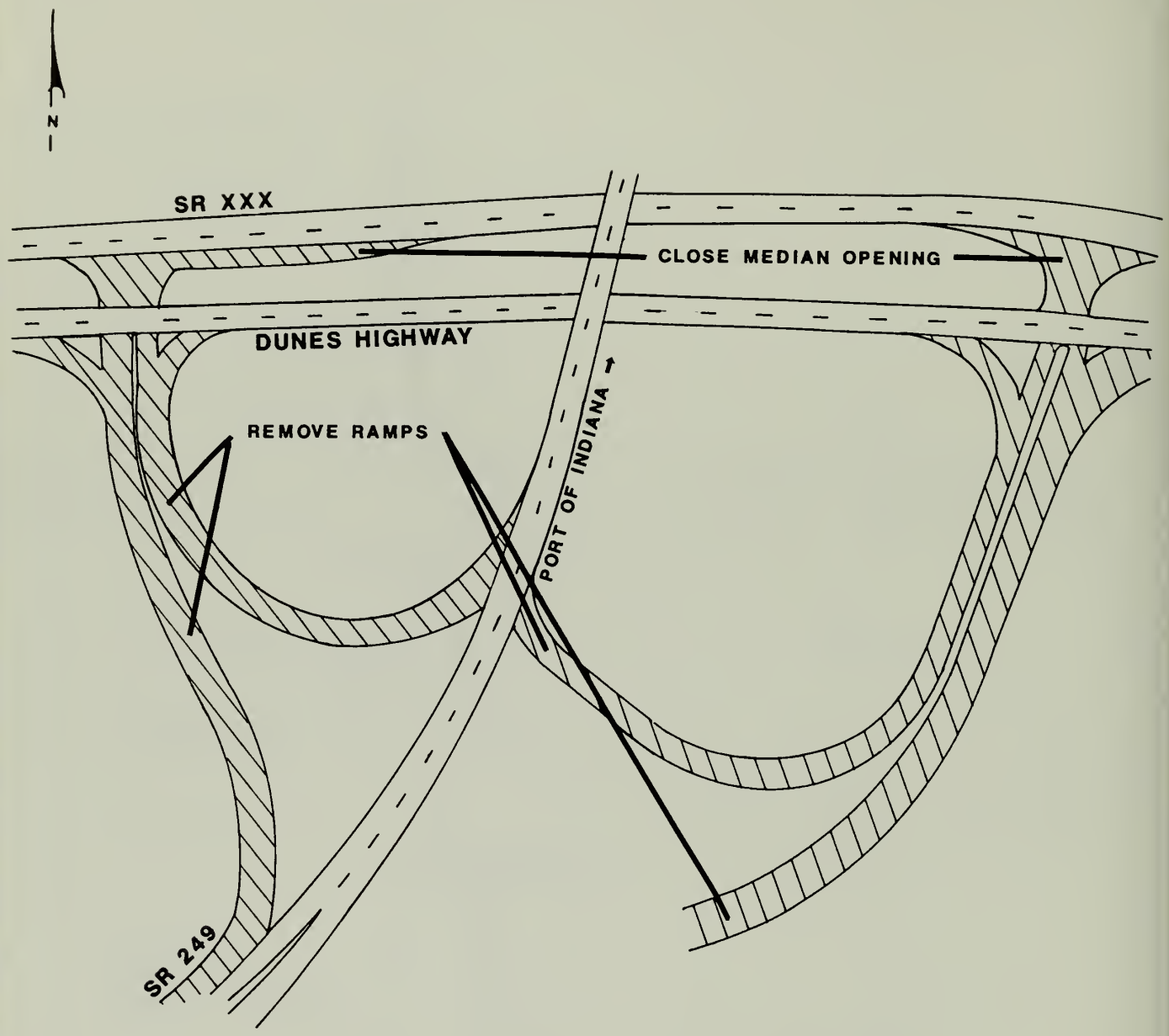
RECOMMENDED IMPROVEMENTS

SR 249 SPUR / PORT OF INDIANA

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-20



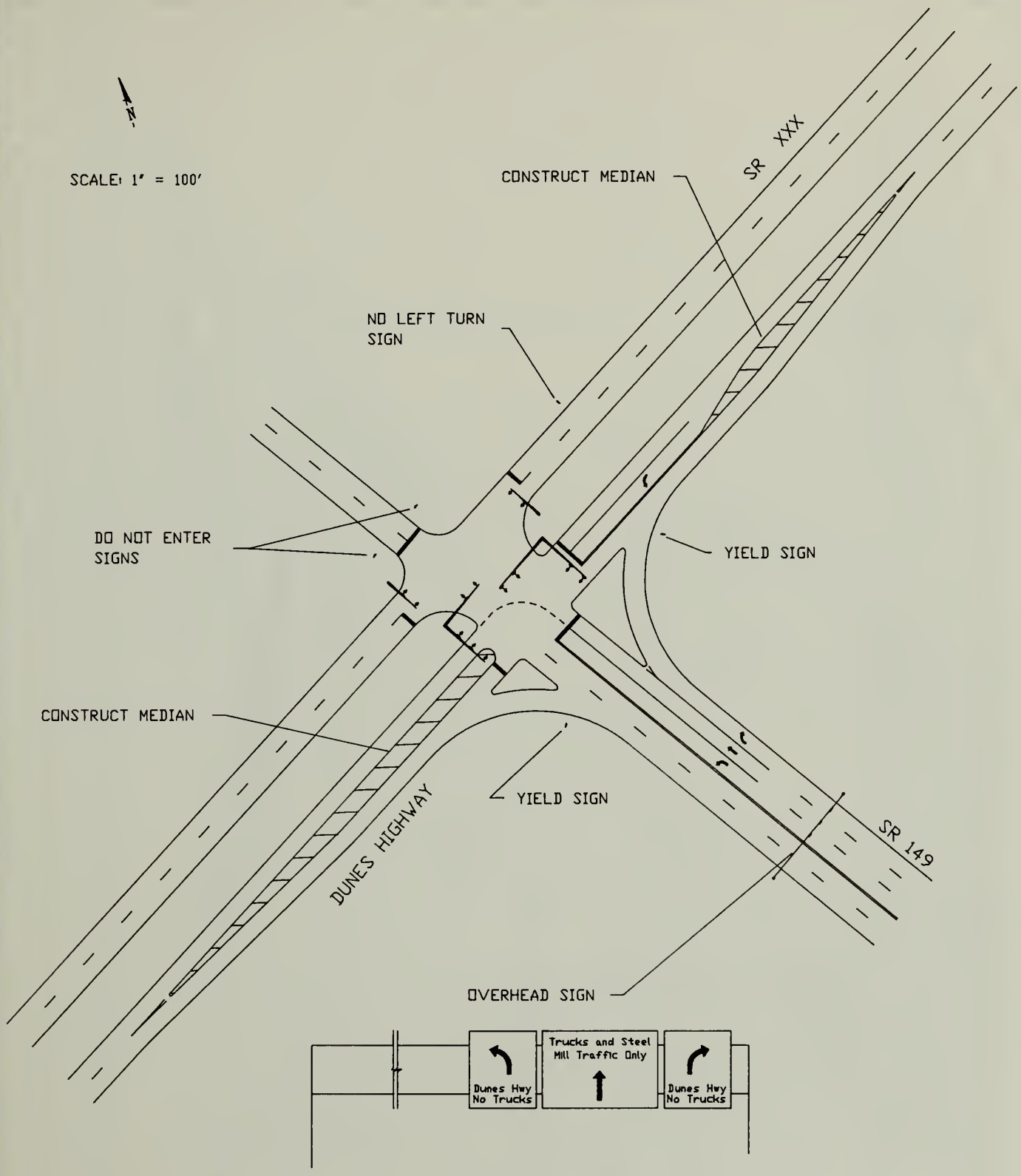
RECOMMENDED IMPROVEMENTS

SR 249 AT SR XXX / DUNES HIGHWAY

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-21



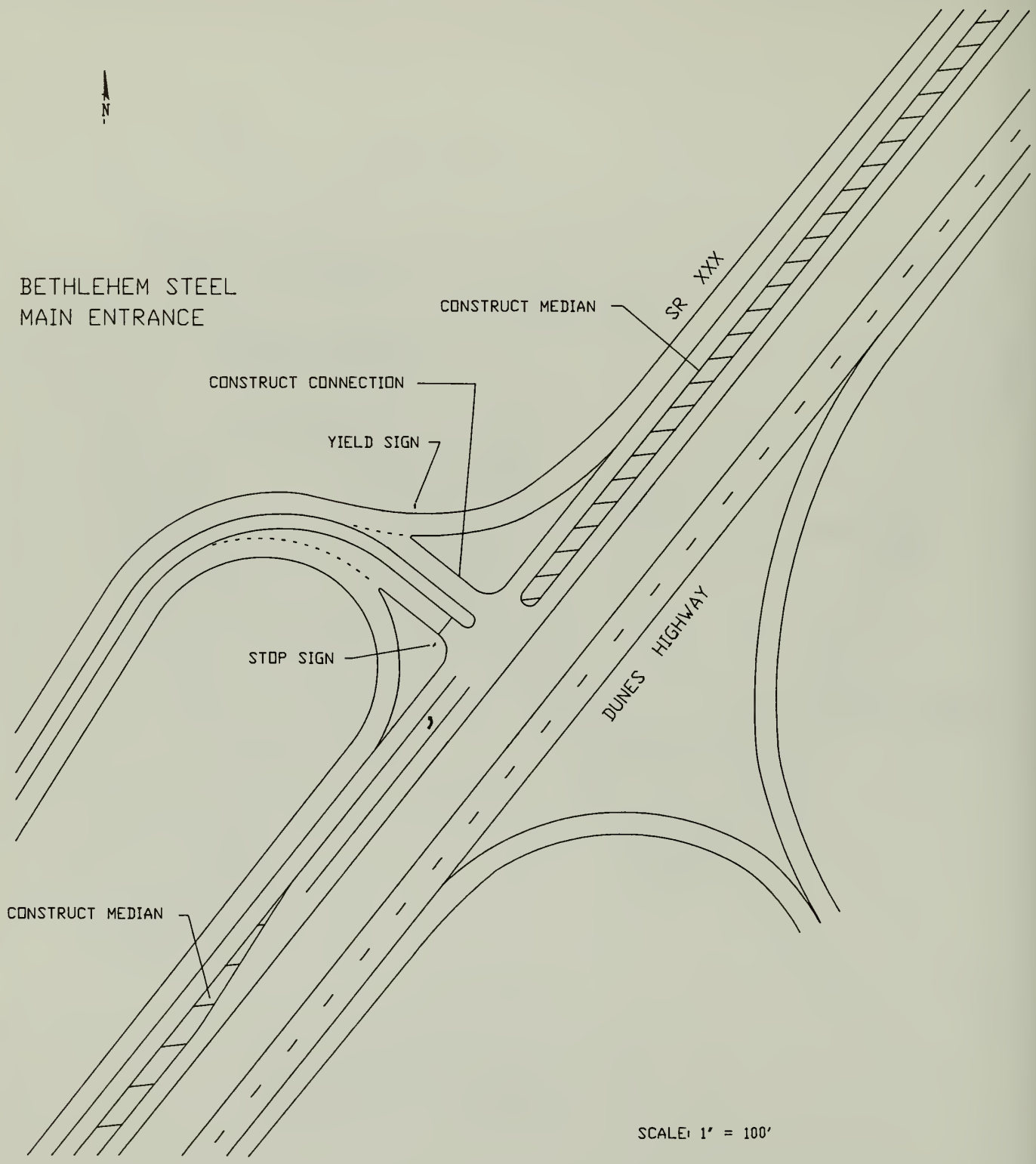
RECOMMENDED IMPROVEMENTS

SR 149 AT SR XXX / DUNES HIGHWAY

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-23



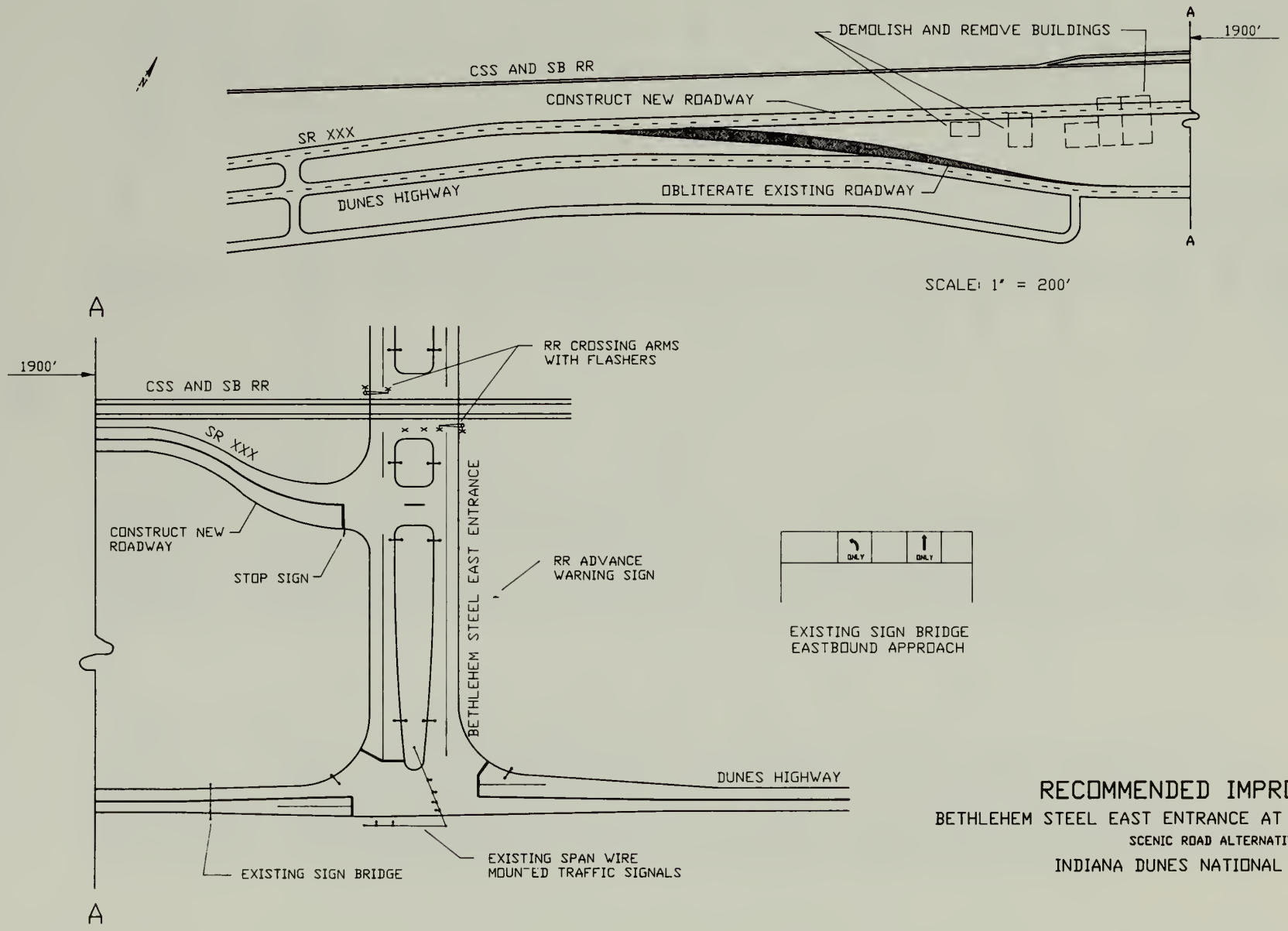
RECOMMENDED IMPROVEMENTS

BETHLEHEM STEEL MAIN ENTRANCE AT SR XXX / DUNES HWY.

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-25



RECOMMENDED IMPROVEMENTS

BETHLEHEM STEEL EAST ENTRANCE AT SR XXX / DUNES HWY.

SCENIC ROAD ALTERNATIVE 2

INDIANA DUNES NATIONAL LAKESHORE

FIGURE 5-26

APPENDIX I: STUDY AREA – THREATENED AND ENDANGERED SPECIES

Scientific Name	Common Name	Status* Fed.	Status* State	Alt. 1	Alt. 2	Alt. 3
Plants						
Arabis glabra	Tower-mustard		ST			
Aralia hispida	Bristly sarsaparilla		SE			
Arenaria stricta	Stiff sandwort		ST	X	X	X
Aristida intermedia	Slim-spike three-awned grass		ST			
Artistida tuberculosa	Seabeach needlegrass		ST			
Aster furcatus	Forking (forked) aster	C2	SE			
Aster junciformis	Rush aster		SR		X	X
Aster ptarmicoides	Prairie goldenrod		ST			
Aster sericeus	Eastern silvery aster		SR		X	X
Betula papyrifera	Paper birch		SR	X	X	X
Cakile edentula var. *lacustris*	American sea-rocket		ST			
Carex alata	Broadwing (winged) sedge		SR	X	X	X
Carex atherodes	Awned sedge		SE			
Carex conoidea	Field sedge		SE			
Carex debilis var. *rudgei*	White-edge sedge		ST	X	X	X
Carex flava	Yellow sedge		SE	X	X	X
Carex folliculata	Long sedge		SR			
Carex leptonervia	Finely-nerved sedge		SE			
Carex pedunculata	Longstalk sedge		ST	X	X	X
Carex seorsa	Weak stellate sedge		ST	X	X	X
Chrysosplenium americanum	American golden-saxifrage		SE	X	X	X
Cirsium pitcheri	Dune (sand) thistle	T	ST	X	X	X
Clintonia borealis	Clinton lily		SE			
Comptonia peregrina	Sweet fern		SR	X	X	X
Coptis trifolia var. *groenlandica*	Goldthread		WL		X	
Cornus amomum	Silky dogwood		SE			
Cornus rugosa	Roundleaf dogwood		ST		X	
Cypripedium candidum	Small white lady's slipper		SR			
Diervilla lonicera	Bush honeysuckle		SR			
Drosera intermedia	Spoon-leaved sundew		SR		X	X
Epigaea repens	Trailing arbutus		SR	X	X	X
Euphorbia polygonifolia	Seaside spurge		ST	X	X	X
Juncus pelocarpus	Brown-fruited rush		ST			
Juncus scirpoides	Scirpus-like rush		SE			
Lathyrus ochroleucus	Pale vetchling peavine		ST			
Linum striatum	Ridged yellow flax		SR			
Lycopodium clavatum	Running ground pine		ST			
Lycopodium inundatum	Northern bog clubmoss		SE			
Lycopodium tristachyum	Deep-root clubmoss		SE			
Menyanthes trifoliata	Buckbean		WL		X	X
Milium effusum	Wood (tall) millet-grass		ST	X	X	X
Myosotis laxa	Smaller forget-me-not		SE			
Nemopanthus mucronatus	Mountain holly		SR		X	
Panax trifolius	Dwarf ginseng		SR	X	X	X
Panicum boreale	Northern panic grass		SR		X	X
Pinus banksiana	Jack pine		SR	X	X	X
Platanthera clavellata	Small green woodland orchis		SR	X	X	X
Platanthera flava var. *herbiola*	Northern rein-orchid		SR			
Poa alsodes	Grove blue (meadow) grass		ST			
Polygala paucifolia	Gay-wing milkwort		SE			
Polygonella articulata	Eastern jointweed		ST	X	X	X
Prunus pensylvanica	Fire (pin) cherry		SR		X	X
Pyrola elliptica	Elliptical-leaf wintergreen		SR			
Rhynchospora macrostachya	Tall beaked-rush		SR		X	X

Scientific Name	Common Name	Status* Fed.	State	Alt. 1	Alt. 2	Alt. 3
Scirpus subterminalis	Water bullrush		ST		X	X
Scleria pauciflora	Fewflower nutrush		SE			
Scleria reticularis	Netted nutrush		SE		X	X
Solidago spathulata var. *gillmanii*	Sticky goldenrod		ST	X	X	X
Stipa avenacea	Blackseed needlegrass		SE			
Talinum rugospermum	Prairie fame-flower	C2	SE			
Thalictrum polygamum	Meadowrue		ST			
Utricularia purpurea	Purple bladderwort		SR		X	X
Veronica glandifera	Speedwell		SR			
Viola blanda	Redstem wild violet		ST			
Viola primulifolia	Primrose-leaf violet		SE			
Amphibians/Reptiles						
Ambystoma laterale	Blue-spotted salamander		SSC		X	X
Clemmys guttata	Spotted turtle		ST			
Clonophis kirtlandii	Kirkland's snake	C2	ST			
Emydoidea blandingsii	Blanding's turtle		SSC			
Hemidactylium scutatum	Four-toed salamander		ST	X	X	X
Pseudacris trisgriata chorus frog	Striped (western)		SSC		X	X
Rana pipiens	Northern leopard frog		SSC			
Sistrurus catenatus catenatus	Eastern massasauga	C2	ST			
Thamnophis proximus	Western ribbon snake		SSC		X	X
Mammals						
None						
Arthropods						
Lycaeides melissa samuelis	Karner blue butterfly	C2	SE		X	X
Birds						
Botaurus lentiginosus	American bittern		SE		X	
Buteo lineatus	Red-shouldered hawk		SSC			
Caprimulgus caolinensis	Chuck-will's-widow		WL			
Circus cyaneus	Northern harrier		SE			
Empidonax alnorum	Alder flycatcher		WL			
Ixobrychus exilis	Least bittern		SSC		X	
Lanius ludovicianus	Loggerhead shrike		SE		X	
Nycticorax nycticorax	Black-crowned night heron		SE		X	
Rallus elegans	King rail		SE	X	X	X
Wilsonia canadensis	Canada warbler		SSC			
Wilsonia citrina	Hooded warbler		SSC			

Sources: Indiana Dept. of Natural Resources (pers. comm., 1989); U.S. Fish and Wildlife Service (pers. comm. 1989); Resestar (1988)

*ST = state threatened
SE = state endangered
SR = state rare
WL = watch list
SSC = state special concern
T = threatened (federal)
C2 = proposed for listing (category 2 – federal)

APPENDIX J: CHARACTER OF LANDS WITHIN THE US 12 CORRIDOR*

Table J-1. Land Cover/Land Use

Existing Development or Unsuitable Lands		Acres
water		236
shrub/marsh/forested wetlands		1,186
residential		995
mixed commercial/residential		190
commercial		1,094
industrial		2,224
state and national parklands		9,359
	Subtotal	15,284
Potentially Developable Lands		
terrestrial shrubs/upland forest		2,257
agriculture/grass		1,019
sand		71
	Subtotal	3,347
	Total	18,631

Table J-2. Potentially Developable Lands with Composite Zoning

Composite Zoning Category		Acres of Potentially Developable Lands
single-family residential		683
multifamily residential		18
commercial/business		104
light industry		274
heavy industry		570
zoning not available		1,698
	Total	3,347

* Potential scenic corridor.

SELECTED REFERENCES

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS

1972 *A Policy on Geometric Design of Rural Highways, 1965.* Eighth ed., Association General Offices, Washington, D.C.

ARIZONA DEPARTMENT OF TRANSPORTATION

n.d. *Application Procedures for Designation of Parkways, Historic and Scenic Roads.*

ARMENTANO, THOMAS V., ERIC S. MENGES, AND JANE MOLOFSKY

1984 *Analysis of Air-Pollution-Sensitive Vegetation at Indiana Dunes National Lakeshore.* Holcomb Research Institute Paper No. 33. Butler University, Indianapolis, Indiana. October.

BOWLES, MARLIN L., WILLIAM J. HESS, AND MARCELLA M. DEMAURO

1984 *An Assessment of the Monitoring Program for Special Floristic Elements at Indiana Dunes National Lakeshore, Phase I, The Endangered Species.* The Morton Arboretum, Lisle, Illinois.

1988a *An Assessment of the Monitoring Program for Special Floristic Elements at Indiana Dunes National Lakeshore, Phase II, Threatened and Special Concern Species.* The Morton Arboretum, Lisle, Illinois.

1988b *Little Calumet River Monitoring.* On file at Indiana Dunes National Lakeshore, Porter, Indiana.

CALIFORNIA DEPARTMENT OF PUBLIC WORKS, TRANSPORTATION AGENCY,

n.d. *The Scenic Route: A Guide for the Designation of an Official Scenic Highway*, by Edmund G. Brown (Governor), Robert B. Brandford (Administrator, Transportation Agency), John Erreca (Director, Department of Public Works), and J.C. Womack (State Highway Engineer, Division of Highways)

CALIFORNIA DEPARTMENT OF TRANSPORTATION, BUSINESS, TRANSPORTATION HOUSING AGENCY

1988 *Guidelines for the Official Designation of Scenic Highways.*

CITY OF GARY, INDIANA, AND NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR

1989 *Gary Marina Draft Environmental Impact Statement.* Department of Planning and Development. April.

DEPARTMENT OF COMMERCE

1966 *A Proposed Program for Scenic Roads and Parkways.* Prepared for the President's Council on Recreation and Natural Beauty, Washington, D.C. Available from Superintendent of Documents, Government Printing Office, Washington, D.C.

DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION

1988 *Scenic Byways.* Publication No.: FHWA-DF-88-004, July 1988. Prepared for "Scenic Byways '88"' National Conference.

DOLAK, DAVID A.

1986 *Water Resources Baseline Inventory and Assessment, Indiana Dunes National Lakeshore.*

ENGEL, J. RONALD

1983 *Sacred Sands: The Struggle for Community in the Indiana Dunes.* Wesleyan University Press, Middletown, Connecticut.

ENVIRONMENTAL PROTECTION AGENCY
1986 *Solving the Hazardous Waste Problem.* EPA's RCRA Program EPA/530-SW-86-037. Office of Solid Waste, Washington, D.C. November.

FEDERAL HIGHWAY ADMINISTRATION, U.S. DEPARTMENT OF TRANSPORTATION
1981 *Visual Impact Assessment for Highway Projects.* Contract DOT-FH-11-9694, Reprint June. Washington, D.C.: Office of Environmental Policy.

1988 *Scenic Byways.* Publication No. FHWA-DF-88-004. July

1989 *Final Environmental Impact Statement, East Unit Access Road and US 12 Relocation LaPorte County, Porter County, City of Michigan City, Indiana.* Report No. FHWA-IND-EIS-87-02-F, Project No. ID-94-2(62) and NPS-M-H829(2). August.

FISH AND WILDLIFE SERVICE, U. S. DEPARTMENT OF THE INTERIOR
1985 *Classification of Wetlands and Deepwater Habitats of the United States.* FWS/OBS-79/31. Office of Biological Services, Washington, D.C. September.

FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
1973 *National Forest Landscape Management, Volume 1.* Agriculture Handbook No. 434. Washington, D.C.

1974 "The Visual Management System," Chapter 1 in *National Forest Landscape Management*, Vol. 2. Agriculture Handbook No. 462. Washington, D.C.

FRANKLIN, KAY AND NORMA SCHAEFFER
1983 *Dual for the Dunes.* University of Illinois Press, Urbana and Chicago.

HONERKAMP, MARJORY
1968 *An Appraisal of the Archaeological Resources and Ecological Context of the Proposed Indiana Dunes National Lakeshore.* Report contracted by the National Park Service. On File at the Denver Service Center, Technical Information Center. Denver, Colorado.

IDAHO TRAVEL COUNCIL
1986 *A Study of Highway Signing for Idaho's Scenic Attractions and Historic Sites.* Prepared by Planmakers, Boise, Idaho, John Bertram Project Director.

INDIANA CHAMBER OF COMMERCE
1987 *Here is Your Indiana Government.* Indianapolis, Indiana.

INDIANA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF FISH AND WILDLIFE
1988 *Timing, Size and Exploitation of Salmonid Spawning Runs At Trail Creek and the Little Calumet River System, 1987-88.* Fisheries Section, Indianapolis, Indiana.

1989a *A Creel Survey of the Indiana Waters of Lake Michigan, 1988.* Fisheries Section, Indianapolis, Indiana.

1989b *Numbers and Fin Clips of Steelhead, Coho Salmon, and Chinook Salmon Stocked in the Indiana Waters of Lake Michigan Including Trail Creek, Little Calumet River, and St. Joseph River, 1984 Through June 1989.* Fisheries Section, Indianapolis, Indiana.

INTERNATIONAL FEDERATION OF LANDSCAPE ARCHITECTS, ROADS COMMITTEE
1987 *A Bibliography: Roads in the Landscape, Environmentally Sensitive Location and Design.* NPS Denver Service Center, Denver, Colorado. Available at NPS Technical Information Center, Denver, Colorado.

ITT RESEARCH INSTITUTE
1980 *A Study of Impacts of Man-Made Noise on Natural Sound.* 4 vols. Prepared for National Park Service by Howard R. Schechter, Engineering Division. Contract No. CX-6300-7-007. Available at NPS Technical Information Center, Denver, Colorado.

JOHNSON, ANN
1974 *Archaeological Assessment for the West Beach Area EIS, Indiana Dunes National Lakeshore.* On file at Indiana Dunes National Lakeshore, Porter, Indiana.

LIMP, W. FREDERICK
1974 *The Bailly Site: Archaeological Study of an Early Historic Homestead in the Calumet.* Report contracted by the National Park Service. On File at the Denver Service Center, Technical Information Center. Denver, Colorado.

MELNICK, ROBERT Z.
1984 *Cultural Landscapes: Rural Historic Districts in the National Park System.* Contract #CX-0001-0-0022 Kansas State University. Washington, D.C.

MINNESOTA DEPARTMENT OF TRANSPORTATION
1988 *Highways in Recreation Areas, Draft Plan.*

MUNSON, CHERYL A. AND KEVIN CROUCH
1976 *A Brief Archaeological Investigation at the Bailly Homestead, Indiana Dunes National Lakeshore.* On file at Indiana Dunes National Lakeshore.

NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR
1964 *National Parkways Handbook: Release 1.* Washington, D.C.

1978 *Preliminary Information Base, Indiana Dunes National Lakeshore.* October.

1979 *Assessment of Alternatives for the General Management Plan, Indiana Dunes National Lakeshore.* July.

1980 *General Management Plan, Indiana Dunes National Lakeshore.* Available at Denver Service Center, Denver, Colorado. February

1983 *Transportation Study, Indiana Dunes National Lakeshore.* Available at Denver Service Center, Denver, Colorado.

1984a *Park Road Standards.* Prepared by the Park Roads Task Force. Washington, D.C.

1984b *Trail Plan, Indiana Dunes National Lakeshore, Indiana.* Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana, and Denver Service Center, Denver, Colorado. April.

1986 *Little Calumet River Management Plan and Environmental Assessment, Indiana Dunes National Lakeshore.* July. Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

1987 *Resource Management Plan and Environmental Assessment, Indiana Dunes National Lakeshore.* January. Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

1988a *Statement For Management, Indiana Dunes National Lakeshore.* April. Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

1988b *Air Quality in the National Parks.* Natural Resources Program, Natural Resources Report 88-1, NPS Contract No. CX-0001-4-0054. Air Quality Division, Denver, Colorado. July.

NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR (cont.)

1989 *Statement for Interpretation, Indiana Dunes National Lakeshore, Fiscal Year 1989.* Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

1990a *Draft General Management Plan Amendment and Environmental Assessment.* Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

1990b *Draft Little Calumet River Corridor Plan and Environmental Assessment.* Available at Indiana Dunes National Lakeshore headquarters, Porter, Indiana.

OREGON DEPARTMENT OF TRANSPORTATION

n.d. *Historic and Scenic Highway Program.* Prepared by the Highway Division, Planning Section, System Studies Unit

PURDUE UNIVERSITY

1986 *Executive Summary: Shoreline Situation Report, Indiana Dunes National Lakeshore.* School of Civil Engineering, Great Lakes Coastal Research Laboratory. June.

RESETAR, ALLEN

1988 *Distribution and Ecology of Amphibians and Reptiles in Selected Areas of Lake, Porter, LaPorte, and Newton Counties, Indiana, with Special Emphasis on State-listed Species.* Prepared for Indiana Department of Natural Resources, Nongame and Endangered Wildlife Program.

SIMONDS, JOHN ORMSBEE

1961 *Landscape Architecture.* McGraw-Hill Book Company, Inc., New York, Toronto, London.

SMARDON, RICHARD C., JAMES F. PALMER, JOHN P. FELLMAN (eds)

1986 *Foundations for Visual Project Analysis.* New York: John Wiley and Sons.

SOIL CONSERVATION SERVICE, U.S. DEPARTMENT OF AGRICULTURE

1972 *Soil Survey of Lake County, Indiana.* Washington, D.C.: Government Printing Office. July.

1981 *Soil Survey of Porter County, Indiana.* Washington, D.C.: Government Printing Office. February.

TRAFFIC ENGINEERS, INC.

1989 *Transportation Study Final Report.* Under NPS contract no. CX-2000-9-0022, Houston, Texas. Available at Denver Service Center, Denver, Colorado, and national lakeshore headquarters in Porter, Indiana. December.

TRANSPORTATION RESEARCH COUNCIL

1985 *Highway Capacity Manual.* Special Report 209. Washington, D.C.

VERMONT SCENERY PRESERVATION COUNCIL

1979 *Designation Scenic Roads – A Fieldguide.* Prepared for the Vermont Transportation Board.

WEST MICHIGAN TOURIST ASSOCIATION

1989 *Lake Michigan Circle Tour.* West Michigan Tourist Association

PREPARERS AND CONSULTANTS

PLANNING TEAM

Denver Service Center
Lawrence Beal, Team Captain, Community Planner
John Dolan, Transportation Engineer
Ruth Eitel, Visual Information Specialist
Dave Fritz, Cultural Resources Specialist
Paula Machlin, Landscape Architect
Mike Madell, Socioeconomic Specialist
Roberta McDougall, Interpretation Planner
Keith Payne, Landscape Architect
Lynn Peterson, Natural Resources Specialist
Michelle Stuebe, Landscape Architect

Indiana Dunes National Lakeshore
Raymond Gunn, Management Assistant

CONSULTANTS

Denver Service Center
Gary Johnson, Planning Section Chief
Ronald Johnson, Planning Section Chief
Joel Kussman, Planning Branch Chief
Mike Reynolds, Planning Technician, Eastern Team
Janet Runas, Planning Technician, Western Team
Jim Straughan, Transportation Branch Chief
Sarah Wynn, Remote Sensing Applications Specialist, Western Team

Washington Office
Dave Duran, Computer Programmer
Ralph Root, Physical Scientist
Susan Stitt, Remote Sensing Applications Specialist
Gary Waggoner, Botanist

Indiana Dunes National Lakeshore
Dale Engquist, Superintendent
Staff

Midwest Regional Office
Alan Hutchings, Chief of Planning
John Sowl, Landscape Architect

Traffic Engineers, Inc.
Mike McInturff, P.E. (A/E consultant for highway transportation services)

☆ U.S. GOVERNMENT PRINTING OFFICE: 1990—773-038/20,000 REGION NO. 10

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics and editorial staffs of the Denver Service Center. NPS D-91 September 1990.